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## FOUR CASES OF BRAIN TUMOR, IN THREE OF WHICH OPERATION WAS DONE—TWO OPERATIVE RECOVERIES—ULTIMATE DEATH IN ALL.

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(Concluded from p. 52.)

Case III.—*Supposed cerebellar tumor; operation; death; glioma found in floor of third ventricle.* S. L. S., aged fourteen years six months. Seen in consultation with Drs. S. Weir Mitchell, D. D. Stewart, H. C. Wood, C. A. Oliver, and Morris J. Lewis, February 26, 1889.

Dr. Stewart has kindly furnished me with the following facts in the case: "There is no history of tuberculosis on either side, excepting in the paternal grandfather, who died at the age of fifty-three, with supposed tuberculosis pulmonum. No specific history in the parents. His mother has had no miscarriages. The boy's head has always been large since birth. He has been ailing since the summer of 1888, but attended school until November of that year. He then first noticed headache, which was chiefly frontal. In November he had nausea and vomiting for about a week, without convulsions. His eyesight has failed until he cannot read unless the print is large. Not uncommonly he has nausea on rising in the morning. There is no ankle clonus. The knee-jerks, especially the right, are exaggerated."

*January* 19, 1889. There has been a gradual increase of vertigo and vomiting, with unsteady gait. Headache is slight. For six weeks the urine has passed involuntarily. He eats inordinately. He can walk forward and backward as well without as with the guiding sense of vision, but his gait is undoubtedly unsteady. His pupils are dilated and react to light, the right less than the left, and the right is permanently larger than the left, both in shadow and in bright light. There is double optic neuritis. His intellect is dull and his movements slow. Temperature normal, pulse rather irregular, the right being

somewhat the stronger. Hearing, smell and taste are normal on both sides. Tactile sensation is everywhere normal. Urine: sp. gr. 1020; no albumin; no sugar. He is taking iodide of potassium.

29*th*. He vomited the entire day on the 25th without any nausea, the vomited matter containing a little blood.

*February* 8*th*. He is somewhat brighter, and can follow conversation connectedly. A tendency to fall backward and to the left when walking is now very pronounced, especially as soon as he becomes tired. The backward tendency is most marked on halting or turning. In walking or sitting there is also a marked tendency to stoop, with his head and shoulders thrown forward. He still has no control over the bladder. He is markedly constipated. There is objective vertigo, the movements being always in a reverse direction to the hands of a watch. Occipital temperature, on the right side, 96.5°; on the left, 95°. Hard percussion over various parts of the head and especially the occiput elicits no tenderness.

13*th*. He had severe vomiting all day on the 9th, without having taken any iodide to account for it. Occipital temp., right, 94.8°; left, 96°; the thermometer being held by a strap to the head for eight minutes.

19*th*. All the morning of the 17th he had again continuous vomiting, and in the afternoon was dull and stupid. This continued during the next day, the 18th, on the afternoon of which he was delirious. His sight is steadily failing and his gait has become more uncertain. He cannot take even two or three steps without stumbling, and with a decided tendency to fall to the left. His stumbling is due to the fact that he does not lift his feet, but drags his toes, yet in a sitting posture he can flex and extend the feet. Over the left occipital bone the percussion note seems to be decidedly tympanitic, as though air were beneath it.

25*th*. He has been unusually dull for the past week. His head seems to have increased somewhat in size since I first saw him. The veins of the head show very distinctly. Yesterday the head was shaved and a consultation held with Dr. S. Weir Mitchell. Evidently the boy was sinking, his sight having entirely failed and the tendency to coma being marked. His gait had grown exceedingly uncertain. His body was rigid and his neck muscles stiff. The scalp shows two slight scars on the upper occipital region. They are said to have been present from early boyhood. No symptoms seem to be due to them. The scalp temperature was carefully taken, Séguin's thermometer being used. The thermometer was carefully held in place with equable pressure until it entirely ceased to rise. The smaller number indicates the higher temperature.

| | | Right. | Left. |
|---|---|---|---|
| No. 1. | Occipital | —3 | —3 |
| No. 2. | Occipital | —3 | —2 |
| No. 3. | Occipital | —2 | —2 |
| No. 4. | Parietal | —4½ | —3 |
| No. 5. | Bregmatic | —2 | —3 |
| No. 6. | Rolandic | —3 | —3½ |
| No. 7. | Frontal | —6½ | —5 |
| No. 8. | Frontal | —4 | —4 |

26*th* A consultation was held with the gentlemen already named. The following measurements were taken by Dr. Keen: Circumference of the head, 22⅝ inches. When the halves were measured separately a slightly different measurement was obtained, the right measuring

11⅝ inches, and the left 11⅞ inches, the difference in total circumference being evidently an error of measurement. From the glabella to the inion measured 14 inches.

My own opinion was, by exclusion and presence of a few signs, that there was probably a tumor in the middle lobe of the cerebellum, growing into the right lobe or, at all events, exerting pressure upon it. There seemed to be absence of signs implicating other parts of the brain. The ataxic gait, with a tendency to fall backward and to the left, marked double optic neuritis, signs of ventricular distention, stupor, the last being relieved by free purgation and digitalis, all pointed to the presence of cerebellar tumor. On the whole this diagnosis was accepted at the consultation, although not without some doubts, especially by Dr. Wood, who was himself disinclined to operation. As, however, without operation the boy had absolutely no chance, and operation, although giving a small chance only, was the one possible means of escape, it was accordingly decided to recommend an operation."

Dr Chas. A. Oliver reported on the ocular condition as follows:

"The patient was first seen on the 27th of February, 1889. In August of the previous year his eyes were examined for glasses by a physician who stated that the retinæ were temporarily 'clouded,' and that this was dependent upon local disturbance. Dating from October of the same year, sight was gradually lessened; this defect of vision being associated with sudden attacks of blindness—the last one having occurred on the evening before the examination. The patient claimed that the sight of the left eye had always remained the better.

"At the time of the examination the pupillary areas were equally and evenly dilated to 6 mm. each, except at four minute points caused by narrow posterior synechiæ. In the left eye there were two small posterior synechiæ situated up and in and up and out, the former being the larger. In the right eye there were two narrow similar tags situated down and in. Intra-ocular tension was normal in each eye.

"Although vision was reduced to the faintest light-perception in each eye, a typical left homonymous hemianopia could be readily determined by careful study with two candle flames, the double bow at the macular portion of the remaining fields of vision being easily obtained. The retained area of the field of the right eye was about one-fifth larger than that of the remaining field of the fellow eye.

"Ophthalmoscopically, there was a pronounced choked disk on both sides, this being the greater on the right side (three dioptres as compared with two and one-half dioptres in height). The tissues of the swollen nerve-heads were undergoing atrophic changes, these having advanced to a greater degree to the temporal halves in each eye, and having become more pronounced in the left eye. On both sides the surrounding retinal œdema was confined to narrow areas around the disks. In the right eye, numerous capillary feathery hemorrhages extended in the fibre layer of the retina, this being accompanied by a number of fine cholesterin crystals and clump-like extravasations in the substance of the nerve-head swelling. To the outside of the right disk, and seemingly fixed, there was a rounded whitish amorphous-like mass which extended as far forward into the vitreous as the swollen disk itself. Both macular regions seemed to be devoid of any gross pathological changes. The retinal arteries and veins were diminished in size, especially the arteries, they being the more reduced in the left eye.

"With the exception of a slight paresis of the left inferior rectus muscle, the action of the extra-ocular muscles seems to be intact.

"Repeated studies for the production of the hemianopic pupillary inaction sign, after proper and prolonged periods of rest and exposures to narrow pencils of peripherally situated beams of concentrated artificial light, seemed at times to evidence this special sign (especially in the right eye), but just as frequently failed to show anything that was characteristic. Sometimes, however, the irides, which were tied down to the anterior capsules at their most important places by narrow pigment tags, seemed feebly to respond to light-stimulus when thrown from any portion of the periphery.

"The ocular symptoms (which were far advanced before any proper ophthalmic study was permitted, and only after the motor groupings had become quite vague, confusing, and almost valueless) were markedly significant of a gross intra-cranial lesion situated in the posterior base, causing both ventricular and basilar pressures and extravasations, which were very marked on the right side.

"Evidently, by reason of the easy fatigue of the patient, the almost complete blindness (faint light-perception alone in the remaining half-fields), the pronounced pupillary dilatation, the almost infinitesimal and interfered-with movements of the irides, and the necessity of beams of strong light-stimulus from the very imperfect apparatus then in use to produce any movement at all (thus at times producing strong side glares of diffused light), the Wernicke sign was so uncertain as to render this important localizing symptom to be conscientiously negatived.

"For these reasons, the sudden attacks of almost total blindness, with the intense double optic neuritis, the retinal and iridic evidences of probable tuberculous deposition, in association with the general symptoms of cerebellar lesion, made probable the existence of a similar mass in that situation. This tumor, pressing forward on the fourth ventricle, could thus give rise to internal hydrocephalus with consequent disturbance of the nuclei of the left inferior rectus and both iris muscles, and allow extravasations of infected lymph into the sheaths of the second nerve, thus producing peripheral inflammation in the optic nerve-heads and circumjacent retinæ; and finally it could thus indirectly produce upward, inward, and forward pressure against the basilar ganglia and outgoing nerve strands, so as to produce the right tract lesions and the series of doubtful sensory-motor arc disturbances.

"NOTE.—From the results of more recent studies of similar cases it is quite certain that had this case been studied earlier, the ocular symptoms would have been so sure and so easy to differentiate, that almost positive assertion as to the exact position of the intra-cranial neoplasm, as found post-mortem, could have been vouchsafed by the ophthalmic signs alone."

*Operation* at St. Agnes Hospital, March 2, 1889, by W. W. Keen. Pulse normal—85. At beginning of operation, under ether, it rose to 120. A reversed U-shaped incision was made from just over the right mastoid process down into the muscles of the neck, terminating an inch above and to the left of the inion. The incision was rapidly carried deep into the muscles, and the flap turned down. Very abundant hemorrhage took place from a large number of vessels, requiring a great many hæmostatic forceps. Two small vessels emerging from the bone on each

side of the occipital crest were exceedingly troublesome. They could not be caught with forceps; plugging with disinfected matches was not effective, but they were finally controlled by the Paquelin cautery. The muscles below the flap were now scraped off the bone until the foramen magnum and the sheath of the cord were easily seen and felt.

The centre pin of a three-quarter inch trephine was now applied, as suggested by Mr. Lloyd (*Lancet*, October 1, 1888) at a point midway between the inion and the tip of the mastoid. A few turns of the trephine sufficed to penetrate the bone, which was so thin that the centre-pin penetrated the dura before a groove was cut into the bone sufficient to allow of the withdrawal of the centre-pin. When the button of bone was removed a jet of cerebro-spinal fluid spurted through this small opening in the dura to a distance of several inches. The opening in the bone was now easily enlarged in any direction until it reached within a half-inch of the groove for the lateral sinuses and the same distance from the foramen magnum. Internally it reached to a quarter of an inch of the middle line, and externally almost to the lateral sinus again. Escape of the fluid made the dura somewhat loose, so that tapping on it caused it to flap to and fro, and the same effect was caused by pulsation of the brain. In fact, this motion at the upper border of the opening at one time caused me to think that it was a venous pulse in the sinus. When the cerebellum was exposed by a flap with the base upward toward the sinus its appearance was healthy. There was slight œdema of the pia. To the touch the cerebellum seemed soft.

The little finger was now passed over the entire upper surface of the cerebellum, and the tense tentorium was felt. The projection of the middle lobe was moderately appreciable. Below the cerebellum the same sweep of the little finger showed nothing abnormal. No appreciable vessels were felt passing from the cerebellum to the tentorium, but each time on withdrawal of the finger a considerable gush of venous blood followed. This, however, ceased spontaneously. The cerebellum was now incised posteriorly, and the little finger introduced gently into it internally to a depth of an inch and three-eighths. This caused the pulse, which had risen to 164 on exposing the brain, to rise suddenly to 184 at the time of the incision and manipulation of the cerebellum, but in half a minute to fall again to 160. No tumor was found after most careful and gentle search. The wound in the dura was closed by sutures, and the external wound, after suitable drainage, was closed by a number of deep sutures through the muscles, as well as by a few superficial sutures.

The operation lasted for nearly an hour and a half, the greater portion being taken up by the obtaining of a dry field for operation before the brain was opened, and by the closure of the dura and the external wound after the operation proper was terminated.

The patient was placed in bed surrounded by hot bottles, his pulse being 156 and of very fair strength. He recovered consciousness and recognized his father and the resident, speaking to them rationally.

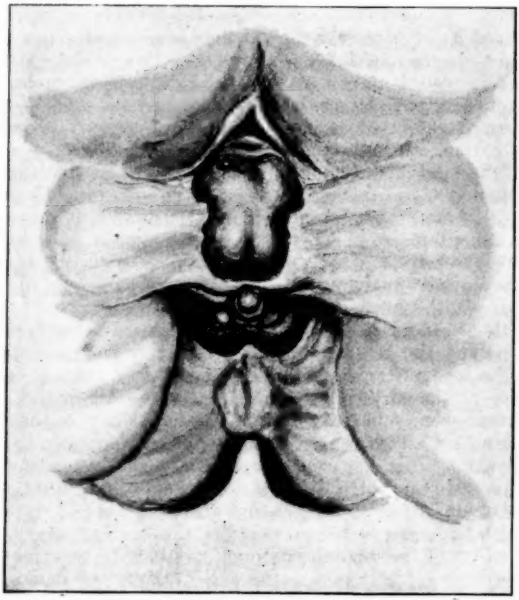
After a few hours he was attacked with rigidity of the muscles and universal tremor. Horizontal nystagmus was very marked. He gradually sank, and died nine hours after the operation was completed.

*Post-mortem* by Dr. William J. Taylor. Skull: Over the parietal eminence and in several other places it was elastic and depressible, but not papyraceous. It was very thin at all points, so that a few strokes of

the saw penetrated the interior. The sutures were widened but the bones not separated. It was a typical hydrocephalic skull. There was a very small cord-like post-mortem clot in the right lateral and superior longitudinal sinuses, none in the straight sinus. The Pacchionian bodies were normal.

On inspecting the base of the brain the floor of the third ventricle presented a marked hemispherical projection, producing pressure on the optic tract and chiasm, and to a less extent on the optic nerves. (Fig. 5.)

FIG. 5.




Tumor (opposite T) in the floor of the third ventricle. (Drawn by DR. J. MADISON TAYLOR.)

The optic tracts and the chiasm were attached to the tumor, and the tracts were spread out into bands on the right and left sides respectively, 12 to 10 mm. wide. The chiasm also was flattened. The angle of divergence between the crura cerebri was increased. The fourth ventricle was not distended. The insula and everything in the Sylvian fissure were normal. There was no tumor in the cerebellum.

Both lobes of the cerebrum fluctuated. The lateral ventricles were six inches long antero-posteriorly and were filled with cerebro-spinal fluid amounting to about twelve or fourteen ounces. The foramen of Monro was dilated, and through it a grayish translucent tumor was at once seen in the third ventricle. When this was exposed the tumor was found to extend from the anterior commissure to the posterior. It was fused with the anterior commissure, and pressed upon the posterior commissure and corpora quadrigemina, but was not fused with them. The

aqueduct of Sylvius posteriorly and the pillars of the fornix anteriorly were widely separated by the tumor. Posteriorly the peduncles of the pineal gland were also widely spread out on the two sides of the tumor. Laterally the tumor fused with the optic thalami.

The tumor had pushed down the floor of the third ventricle and had also elevated its roof, the fornix. On the surface of the tumor anteriorly was a small brownish-green, almost black, cyst, which on being opened discharged twenty minims of yellow fluid, resembling bile. Next to it, but deeper, was another cyst filled with almost perfectly black fluid. The interior of the tumor showed several cysts, giving it a sponge-like appearance on section. The tumor was somewhat denser than the brain substance.

The following report as to the microscopical appearance was made by Professor William Osler:

"A small portion from the superficial part of the tumor when teased showed innumerable fibres, the majority of which represent the tail-like extensions of spindle cells; some of these are of extraordinary length. Certain of these fibre cells have a curious translucency. Among these, in considerable numbers, are irregularly-shaped cells, somewhat larger than ordinary leucocytes.

"The deeper portion of the growth is denser, the fibres being more closely set, and among them are many large cells with and without processes, which resemble in a remarkable degree ordinary ganglion cells. The tumor corresponded to the neuro-glioma of Klebs, a not uncommon growth in this situation."

This case is only another added to the many of a wrong diagnosis of the location of a cerebral tumor. Certainly, to me, at least, and to the majority of the consultants, it seemed most likely to be in the cerebellum, though some doubted it very much. Of course, if a correct diagnosis of its location had been made, no operative interference would have been undertaken. I have placed it upon record, both as an error of diagnosis and as a means of correcting such errors, possibly, in the future. From a surgical point of view, although the operation was a mistake, yet it was at the same time a merciful one, for the poor boy was suffering to such a degree that death was a blessing.

CASE IV.—*Tubercular tumor in the motor area; operation; operative recovery; death; autopsy.* W. M., aged fifty-two years, Scotchman, was admitted to the Infirmary for Nervous Diseases, under the care of Dr. Morris J. Lewis, August 6, 1890, who furnishes the following history: "He is a button-maker, and calls himself a 'moderate drinker,' taking about three glasses of beer daily, and getting drunk every Saturday. He smokes excessively; denies syphilis; admits gonorrhœa. His family history is unimportant, except that his mother had some nervous trouble, which compelled her to stop when she had walked about 100 yards, before being able to proceed further. At five years of age he received a blow above the right eye, but no ill effects have followed. A scar marks the site of the injury. Has never had rheumatism except once, after exposure to wet.

"His present trouble began seven or eight weeks ago, with tingling on the inner side of the index finger of the left hand, extending to the whole hand and lasting five minutes. Immediately after this there was twitching of the left side of the mouth, lasting for a minute. Speech was lost for a few seconds, and then was 'thick.' Four weeks later he had clonic spasm of the head, which turned to the left. The attack lasted for five minutes, and speech was lost for a few moments. He knew what he wanted to say but was not able to move his tongue. Two weeks later the same sensation recurred in his hand and lip, attended with gradually increasing weakness on left side, beginning in the arm."

*Status præsens.* He has had but very little headache, but to-day it is very bad in the frontal region. He sleeps badly; appetite poor; bowels constipated. Passes the average amount of urine, with a specific gravity of 1020; no albumin, no sugar. When in repose his mouth is straight, the left naso-labial fold being less marked than the right. Eyes shut well; can whistle well. On making grimaces there is some drawing of the mouth to right. Pupils equal, and react well. Tongue protruded straight. Dynamometer: R., 135; L., 120. Knee-jerk, elbow-jerk, and muscle-jerk exaggerated on both sides. Scrapes his left foot slightly in walking. Sensation good, heart normal. There is no tenderness or œdema of scalp; no vomiting; does not now miscall words.

*August* 27. Dynamometer: R., 130; L., 90. Sometimes in swallowing, liquids "go the wrong way." He is suffering much from headache. Knee-jerk is most marked on the right side.

*September* 24. He has had violent headache for two weeks, although the iodide of potassium, which he had been taking in increasing doses, had been stopped for a week. Dynamometer: R., 135; L., 100. No tenderness.

*October* 1. His headache has improved under bromide of potassium. There are indistinct choreic movements of the hands. Dynomometer: R., 110; L., 85.

*November* 26. Six days ago he had a convulsion, beginning in the index and little fingers of the left hand, with clonic spasm in flexion and extension, then clonic spasm of all the fingers of the hand on this side, followed by severe headache, so that he had to go to bed. On the next day after the above attack he had two similar attacks, beginning in the left hand, and he became very rigid, with great pain in the loins. Dr. de Schweinitz reported on his eyes as follows: "O. D., round, slightly œdematous disk, full central lymph-sheath, slight epithelial chorioiditis. H = 3 D. O. S., oval disk, margins veiled, full lymph-sheath, marked absorption of the pigment epithelium; pupil actions normal, form field uncontracted; central vision normal, and external ocular muscles unaffected.

*December* 3. He has clonic movements of the arm in certain positions. This appears to be in the muscles of the shoulder only, and the vibrations are slow. There is noticed a tendency to reduplication of the first sound of the heart. The valves of the superficial veins of the head and neck are markedly prominent. The epigastric and abdominal reflexes are less marked on the left side than the right, but both are exaggerated. Left testicle reflex diminished; none on right side.

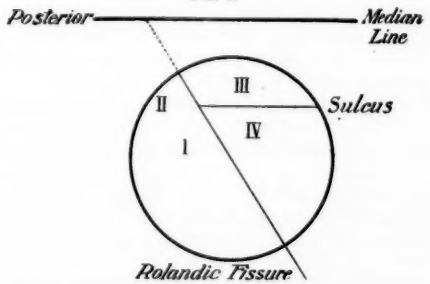
17*th*. Dynamometer: R., 125; L., 35. Speech thicker. He is getting listless and losing interest. His left hand is cold and blue. The eyes show somewhat more of a retinal haze.

*February* 22, 1891. He has never noticed any asymmetrical sweating nor flushing, nor any unilateral subjective sensations. Temperature sense equal and well preserved in face and hands. Sensation to pain good and equal on both sides in face and hands. Localizing power good on both sides of face. Æsthesiometer—two points differentiated: R., $1\frac{1}{8}$ inches; L., $1\frac{1}{4}$ inches, on dorsum of hands; on both cheeks, $1\frac{1}{2}$ inches. No chin-jerk. Tendon-jerks and muscular irritability greater on the left than the right side. Temperature sense on dorsum of both feet good. Æsthesiometer—two points recognized: R., $1\frac{1}{8}$; L., $1\frac{3}{8}$ inches. Sensation to pain good and equal in both feet. Localization good in both feet and legs. Pressure-sense equal and normal on the two sides in hands, arms, feet and face.

*Operation*, February 24, 1891, by W. W. Keen. Before the operation, extract of ergot f℥ij and $\frac{1}{4}$ gr. of morphine were administered. Just as he was about to be etherized a convulsion occurred, the first one that Dr. Lewis or I had seen. There was absolutely no effect upon consciousness, and the convulsion was limited to the left arm, with clonic extension of the left forefinger, slight clonic extension of the forearm (it lay on the arm of the chair in which he sat). This flexion of the forearm was not due to the action of the biceps, but may have been due either to the flexion of the brachialis anticus or the flexion of the hand at the wrist, which lifted the forearm. The convulsion only lasted a half-minute. The patient was placed semi-recumbent on a lounge and kept from slipping down by a sheet passed between the thighs, the two ends being fastened to the head of the lounge.

His cranial index was 71, and therefore the angle of the fissure of Rolando was 67°. From the glabella to the inion was 14 inches. It

FIG. 6.




Showing the points at which the brain was stimulated.

was decided to trephine over the right elbow center, and the fissure of Rolando having been marked out, a point 2 inches along this line and $1\frac{3}{4}$ inches to the right of the middle line was fixed upon as the probable point. A button an inch and a half in diameter was then removed, the line of the fissure of Rolando having first been fixed at the two extremities of the fissure by nicks in the bone. The button removed was normal externally and internally, excepting as to its thickness. At the thickest point it measured three-eighths of an inch, and at its thinnest a little over a quarter of an inch. On opening the dura the brain pulsated. Its color seemed to us slightly yellower than the normal. The

fissure of Rolando ran precisely in the centre of the opening. The pre-Rolandic convolution was divided by a sulcus running from behind forward and a little upward. A large vein lay in the fissure of Rolando, and in this fissure and in the little sulcus just mentioned, the membrane was slightly œdematous and yellowish. The Faradaic battery was then used to locate the centres (secondary current coil 1½ exposed). The cortex was touched at four points, I., II., III., IV., in order named. The patient was not fully under ether during this test. (Fig. 6.)

I. Post-Rolandic convolution, 1¾ inches from the middle line. Right forefinger and right leg lifted (thought to be due to the imperfect anæsthesia at the moment). Extension of left forearm followed by clonic flexor spasm, with extension and flexion of the left wrist, slight motion of lower lip to the left, and protrusion of tongue between the teeth to the left (possibly due to imperfect etherization).

II. Post-Rolandic convolution, 1½ inches from the middle line. Left shoulder lifted, left arm carried over the chest, elbow at a right angle. Clonic convulsive movement of abductors of left shoulder, decided movement of the lower jaw and lip.

III. Pre-Rolandic convolution, 1½ inches from the middle line. Clonic convulsive movements of the left arm across the chest, with forearm flexed, ending, as before, in tonic extension of the wrist. Two slight twitchings of lip (the side was not noted).

IV. Pre-Rolandic convolutions, 1⅝ inches from the middle line. (All these measurements are taken in straight lines at a right angle with the middle line, with the exception of the location of the centre, which is two inches along the line of the fissure of Rolando.) Extension of left fore-, middle- and ring-fingers, followed by clonic movements of extension of the wrist. No response of the face. By touch there is no difference in resistance in the pre- and post-Rolandic convolutions. Both of them give an impression to the finger similar to a floated patella in effusion into the knee-joint; that is, the pressure of the finger seems to depress a layer of less density, and further pressure is arrested by greater resistance.

At point I. in the post-Rolandic convolution an incision about 1 cm. long and 1 cm. in depth was made, but nothing issued but a little blood. The blunt point of Allis's dissector was then pushed in 2 cm. in depth, but nothing was revealed by it. The escaping blood diminished slightly the bulging of the brain, which, from the moment of opening the dura, had been progressively increasing, and now had reached slightly above the external surface of the skull. No further interference was deemed wise.

The dura was then sutured with catgut. One small vessel in the cerebral substance and two in the dura were tied with catgut by a ligature passed under them with a curved needle. The scalp was sutured with silk, and no drainage was used. A sterilized dressing was then applied. The bone button was not replaced.

*March* 5, 1891 (tenth day). Surgically speaking, he did remarkably well after the operation. The sutures were removed on the fifth day. His highest temperature was once 99.6°, most of the time being 99°. Yesterday, however, his temperature rose to 101.6°. It was found that the flap was somewhat swollen, and on making a slight opening at one point, about two drachms of thick, black blood were pressed out from the lower anterior end of the incision. His temperature fell at once, to

98.6° by this morning. Two days after the operation he was unable to move his fingers or wrist, but could slightly flex and extend the elbow. Sensation seemed to be unaltered, but his mental condition made the determination of this unsatisfactory. On the fourth day after the operation his elbow movement was lost, and the only movement of the arm was in the flexion of the fingers. Two days later the left knee seemed to be a little stiff and adduction of the left leg a little sluggish. The elbow movements began to return on March 3d, eight days after the operation.

10*th* (fifteenth day). The power of movement in the left arm has gradually improved. His forefinger, however, cannot be flexed or extended, nor is there any adduction or abduction of the thumb. He is out of bed and walking about the ward. To-day slight left facial palsy was noticed as before the operation. His mental condition bad; he is very despondent and his sleep is poor. The discharge of thick, black blood has continued in a gradually lessening amount until the present time, but has now ceased.

22*d* (one month after the operation). All power of movement in the left arm is now lost saving slight flexion of the fingers. His mind is markedly dull. The left leg is slightly paretic, and there is complete paralysis of the left face.

26*th*. The catheter has had to be used at intervals ever since the operation. To-day he has had involuntary evacuation of urine. He is very weak, and his voice has fallen almost to a whisper. He is quite stupid mentally, and has to be fed like a child. Paralysis of left arm and left face complete, but he can still move his left leg.

31*st*. Much brighter; retains and passes his urine.

*July* 1*st*. Dr. de Schweinitz examined his eyes and reported as follows: "O. D., marked papillitis, apex of swelling + 7 D. O. S., similar condition; general fundus + 3 D. No hemorrhage in either eye; the pupils and form fields normal."

*September* 5*th*. Since the last date he has gradually lost strength, and finally took again to his bed. By August 6th his temperature ran up, until September 3d it attained 102.8°, falling on the 5th to 101.4°, shortly before his death that evening.

*Post-mortem notes*, by Dr. Charles W. Burr, September 6, 1891, nineteen hours after death:

Body much emaciated. Abdomen very green. Slight rigor mortis.

There was marked sinking-in of the scalp at the trephine opening. The scalp itself was normal throughout, the flap having healed so as to leave a very insignificant scar. There was a slight adhesion between the scalp and the membrane, filling the trephine opening.

The skull was normal throughout. The trephine opening was filled by a thin, transluscent, fibrous membrane closely adherent to the dura. A line drawn from ear to ear over the skull passed almost through the centre of the trephine opening, the highest point of which was on this line at a distance of $5\frac{1}{4}$ inches from the upper junction of right ear and scalp and $\frac{3}{4}$ inch from the sagittal suture. Diameter of opening, $1\frac{1}{2}$ inches.

On removing the skull-cap, the dura was found adherent for a short distance around the trephine opening, and to the membrane filling the opening. The dura was also thickened here, and adherent to the brain, so that the latter was torn. The remainder of the dura was normal.

Under the trephine opening, and involving the ascending parietal and ascending frontal convolutions, the brain-matter was softened, mush-like, reddish in color, and, indeed, completely disorganized. There was no apparent œdema of the brain. The convolutions were of average appearance.

The optic nerves were swollen and reddish. The papillæ were swollen and semi-translucent. The central arteries of the retinæ were not visible at their entrances from the disks, but on the retinæ, at a little distance from the disks, several swollen and tortuous bloodvessels were seen.

*Spinal cord.* On opening the dura, quite a large quantity of clear fluid escaped. The membranes and cord appeared normal.

*Thoracic cavity.* The left pleural cavity contained a quart of clear, straw-colored fluid, in which were flakes of lymph. Pleura thickened, and strong bands of fibrous tissue passed between the lung and parietal pleura. Within the left lung, at the posterior part and below the apex, was a cavity about the size of an orange, with thickened walls and arteries crossing it. In the right pleural cavity there was a little clear fluid, slight adhesions existed at the apex on several old scars, and the lung tissue was crepitant throughout and but slightly congested.

*Heart.* Size normal. A little blood in either ventricle. Valves normal.

*Kidneys.* Left slightly enlarged, lobulated. On the surface were two small cysts, one filled with a dark, thick fluid, like broken-down blood; the other with a clear watery fluid. Capsule stripped off with some difficulty. Cortex and medulla well differentiated, the former being slightly thicker than normal. The right kidney, except that no cysts were present, was like the left.

*Stomach* dilated with gas.

*Liver, spleen,* and *intestines* showed nothing pathological.

*October* 25, 1893. *Examination of the hardened brain,* by Dr. Lewis: The entire brain had been hardened in Müller's fluid and alcohol. The dura was found to be adherent upon the right side over the upper portion of the fissure of Rolando. An area of destruction existed upon the right side of the brain, with its centre over the middle of the fissure of Rolando, extending upward to within three-quarters of an inch of the middle line, and downward to within an inch of the fissure of Sylvius. Laterally this invaded the whole of the ascending parietal and the ascending frontal convolutions to the points previously mentioned, thus leaving the upper and lower portions of these two convolutions intact. The destruction of tissue was deepest in the centre of this area, extending well into the white substance, and becoming shallow toward the periphery, where the gray substance only appeared invaded.

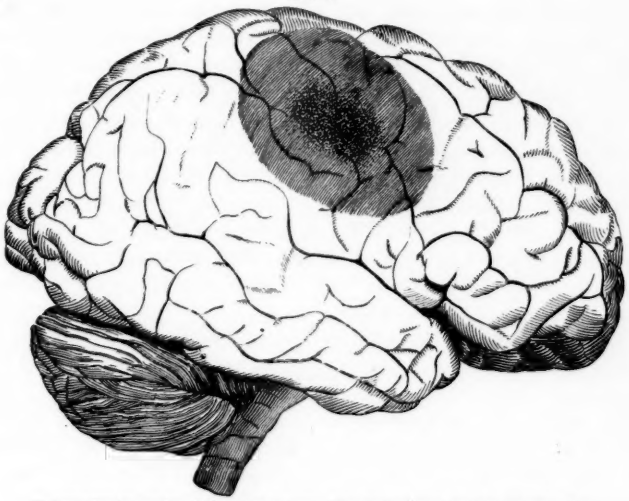
The convolutions immediately above this area, that is, between it and the middle line, appeared sunk a little below the surface of the brain, as if the destroyed portion had allowed them to sink down.

Perpendicular sections made at half-inch intervals from the front of the brain backward showed that this area was the only portion diseased (at least macroscopically). The basal ganglia appeared to be perfectly normal upon section.

The portion of the brain described as "mush-like" in Dr. Burr's notes of the autopsy (the area of destruction mentioned above) (Fig 7) had undergone considerable shrinkage in the process of hardening, and no structure could be detected by the naked eye to indicate its nature, as it

had the appearance of being disorganized brain tissue. A portion removed for microscopical examination, which was made by Dr. Burr, proved it to be a tubercular tumor undergoing secondary softening and caseation.

FIG. 7.



Tubercular tumor involving the cortex. The darker area is that of softening.

REMARKS BY DR. LEWIS.

During the patient's life no more accurate diagnosis seemed justified than that a focus of irritation, in all probability a growth, existed, either cortical or subcortical, in the immediate vicinity of the arm centres upon the right side, the following *résumé* of the symptoms appearing to justify this view, viz.:

Sensory disturbances in left hand, followed by local convulsive movements in left hand and arm, and also in slight degree in the lower left face, followed by gradually increasing paresis of the arm, face, and leg, these parts being affected, as to degree, in the order named, the most marked paresis being in the arm. No choked disk existing seemed to indicate that most likely there was not a great degree of intra-cranial pressure present, at least not sufficient to cause marked intra-ventricular effusion.

As medical treatment had failed to ameliorate the symptoms, and as the patient was slowly growing worse, it was decided to operate. The convulsion occurring just as the patient was being etherized, which was confined strictly to the left hand and arm, seemed to justify the conclusion arrived at in regard to the seat of the irritative process.

The tumor was not recognized at the operation, nor any condition to justify the diagnosis made, the only abnormal condition recognized being the yellowish color and the œdematous appearance of the brain tissue, and the increased tension of the skull contents.

The case is very interesting and instructive from several standpoints. The tubercular tumor in the brain was in all probability secondary to the condition found in the lung. The latter trouble had evidently advanced much farther than was supposed to be the case. Subsequent to the operation the interest in the case centred in the "nervous" symptoms, which seemed difficult of explanation; the condition of the lung, although previously recognized, received but little attention, yet there must have been rapid progress made in the disease in this locality during this period. Under the new light thrown by the autopsy, it is evident that this point should have been more fully considered; the points which then seemed so difficult of explanation now appear clear.

The tumor was not detected at the operation, as previously mentioned, and this naturally raised doubts as to the accuracy of the diagnosis.

The appearance of pronounced papillitis which had not existed prior to the operation, and the subsequent increase of the paralysis after this had lessened two weeks after this period, are now readily accounted for by the probable increase in size of the tumor, the further involvement of the affected motor area, and the subsequent degeneration of the part affected.

No benefit, naturally, followed the operation, although the removal of the button of bone must have given relief to the intra-cranial pressure. The examination of the area exposed by the trephine, which the autopsy proves was correctly placed, was as thorough as was deemed wise, and in the retrospective view of the case it does not appear how the non-recognition of the tumor could have been avoided. The true condition of affairs was not even recognized at the autopsy, nor was it patent at the naked-eye examination of the hardened brain. Prior to the final microscopic examination, the doubt existed whether the disorganization might not be dependent upon secondary troubles following the operation and in consequence of it, a doubt which the discharge of black blood lasting until the fifteenth day seemed to strengthen.

Finally, it may be said that the localizing symptoms were properly interpreted and the trephine correctly placed to uncover the diseased area, the recognition of the mass being prevented by its character, which at the time of operation was in all probability one of infiltration of the tissues, giving to the naked eye the appearance previously described; the incision made at the time dispels the idea that the tumor was then subcortical only. Had this especial tumor been

detected it is not likely that any benefit would have accrued to the patient, as, considering its nature and the general condition of ill health of the patient, it is doubtful if his life would have been prolonged had the mass been removed.

### Remarks by Dr. Keen.

There is little to add to what Dr. Lewis has said. The indications for an exploratory operation seemed to be amply sufficient, and the progressive bulging of the brain as soon as the dura was opened confirmed the diagnosis of tumor. Unfortunately, though we fell upon the exact spot where it lay, the macroscopic appearances misled us, and the punctures did not reveal its presence. Had a small portion of the brain been removed for microscopic examination at the time, great light would probably have been thrown upon the case, and the later symptoms more correctly interpreted. In this case it is doubtful whether, even if the tumor had been recognized, I could have removed it, as it had no recognizable borders, and was not hard enough to give any resistance to touch, and thus guide me as to the area which should have been removed.

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## ON ASCITES CONNECTED WITH NUTMEG LIVER.

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It often happens that cases of special interest and mutually illustrative come under observation in groups, so that the lessons which they individually teach become accentuated, and thus the more deeply impressed on the memory. Thus, recently I have had in my wards, at the same time, three cases of ascites immediately due to nutmeg liver, consequent on chronic mitral-valve disease. It may be said there is nothing very remarkable in this coincidence, for nutmeg liver and general dropsy are the natural and ordinary consequences of mitral obstruction or incompetence, and a certain amount of ascites is an item of general dropsy. But in my cases, as it seems to me, the ascites could not be thus explained; for in one there was no general dropsy and in the other two the quantity of fluid in the abdomen was excessive in relation to the amount of anasarca present. There was clearly some local cause determining the local accumulation. Again it may be said, there is nothing very remarkable even in this; for the nutmeg, like the cirrhosed liver, tends, though in a lesser degree, to interpose an obstacle to the

free escape of venous blood from the abdomen, and thus to the production of ascites. This I admit; at the same time, my own experience leads me to believe that ascites as a consequence of nutmeg liver is comparatively uncommon, and hence to regard the occurrence of three such cases among my hospital patients at the same time as noteworthy and instructive. My cases are the more interesting and impressive, because, while in one (which is still in progress) ascites and œdema of the lower extremities were alone present, in the other two there was an alcoholic history which justified the belief (while the patients were living) that they were the subjects of cirrhosis—a belief which was disproved by post-mortem examination.

There are a few other points which my cases illustrate, to which in due course I shall call attention.

Case I.—Agnes P., a married woman, aged forty-six years, has been under my care on two occasions, first, from June 25 to July 15, 1891, and second, from September 10 to October 17, of the same year. It appeared that she had had a severe attack of acute rheumatism when sixteen years of age, but had subsequently enjoyed uninterrupted good health down to the commencement of her present illness, three months before her first admission. At this time she began to suffer from shortness of breath. This was followed before long by swelling of the abdomen and œdema of the legs, which gradually increased in severity, and a little later by cough and the expectoration of mucus tinged and streaked with blood, and of small clots. Six weeks before becoming my patient she was admitted into University College Hospital, where under treatment she improved, and all signs of dropsy subsided, so that at the end of three weeks she was discharged. Soon, however, her symptoms recurred.

On admission, she was a spare woman with a congested and somewhat dusky face, complaining mainly of dyspnœa, which prevented her from lying down, cough, and enlargement of the abdomen. There was no anasarca. The præcordial dulness was somewhat enlarged, and the apex of the heart-beat in the sixth interspace a little outside the nipple line. The impulses were diffused and feeble and attended with a very slight thrill. The beats were very irregular and about 98 in the minute. Auscultation revealed the presence of mitral and apparently also of aortic valve disease. The sounds varied somewhat from time to time, but the outcome of repeated examinations was as follows: There was a soft but well-marked apex systolic murmur which did not vary with respiration, but was not always audible; there was a presystolic murmur in the usual situation, which also varied—sometimes it was absent, sometimes short, sometimes prolonged and drawling; the second sound was reduplicated, the reduplication being best marked about the level of the nipple, but also well heard at the apex; the second element (which was doubtless due to the aortic valve) was followed by a feeble but roughish murmur, which was loudest and most prolonged at the apex, but was distinctly audible at the level of the nipple, when the true presystolic sound could not be heard. Occasionally, at the apex this sound blended with the presystolic murmur, and thus the two formed a continuous rumble, extending from the aortic second sound to the first sound. Generally the lungs appeared

to be healthy, but there was some dulness at the right base and a little subcrepitation. She had a slight cough with scanty expectoration; and, although her respiration was only twenty-four in the minute, she complained of dyspnœa and had to sit up in bed.

The abdomen was large, thirty-three inches in girth, rounded, and tense and dull in the flanks, and obviously contained fluid. The liver extended for about two inches below the costal margin, and was smooth and tender. The urine was acid, had a specific gravity of 1022, and contained one-eighth albumin.

During her stay in the hospital she suffered occasionally from severe headache, and for some days from rheumatic pains in the joints of the arms and in the feet, with swelling and tenderness of the right great toe. But she gradually improved; and when she left the hospital she had lost all traces of her ascites and of her pulmonary affection; she could lie down with comfort and did not complain of short breath; the action of her heart had become almost regular, and the albumin had disappeared from the urine.

After leaving the hospital she remained for two or three weeks fairly well. Then all her old symptoms gradually re-developed, and when readmitted on the 10th September she was more seriously ill than I had yet seen her. She was livid in the face and extremities, was suffering from diarrhœa, sickness, and great dyspnœa, and had considerable anasarca of the lower extremities. The condition of her heart as to dimensions and murmurs was unaltered; but its beats varied between 140 and 180 in the minute, and were very irregular. There was crepitation at the base of the lungs, and apparently a little fluid at the right base. The abdomen was more distended than formerly, having a girth of thirty-six inches, was dull in the flanks, and presented a marked fluid thrill. The liver extended almost to the umbilicus. The urine had a specific gravity of 1028 and contained one-twelfth albumin and much urates. Again under treatment the patient improved. The dyspnœa disappeared, at any rate, as she lay in bed; the heart's action improved; the abdomen shrunk in girth from thirty-six inches to thirty-one and one-quarter, and the fluid disappeared from it and from the lower extremities; the liver became smaller, though still remaining enlarged; and the urine lost all trace of albumin.

On both occasions she was treated mainly with digitalis and iron and kept at rest in bed.

Case II.—G. B., a waiter, aged thirty-four years, came under my care on August 21st. He had had three attacks of rheumatic fever, the last being four years previously; otherwise he had had good health until the commencement of his present illness, twelve months ago. He then began to suffer from shortness of breath and palpitation, which continued. Six months later his abdomen began to enlarge, and two months ago œdema of the lower extremities came on.

He was a fairly well nourished man, with a livid face, general anasarca, the dropsy being most abundant about the buttocks and in the lower extremities, and a large tense abdomen. The heart's apex beat a little outside the nipple line, but on the normal level; its action was quick and irregular and was attended by a systolic murmur at the apex, extending into the axilla, and accentuation of the second sound at the left base. The apex beat was diffused and weak, and there was pronounced epigastric pulsation. It was stated that he had presented a

presystolic murmur, but this I never heard. The lungs appeared to be healthy with the exception that there were some coarse crepitations at both bases. The abdomen was large and tense, forty-three inches in girth, and contained much fluid. There were no enlarged veins in its walls.

During his residence in the hospital the sounds of the heart remained unchanged; its beats varied roughly from 100 to 180 in the minute and were very irregular in force and rhythm, and not infrequently presented a well-marked bigeminal character, and the abdomen was tapped on four occasions, viz., September 2d to fifteen pints; September 17th to sixteen pints; September 29th to fourteen pints; October 16th to ten pints fourteen ounces, and October 30th to seven pints eight ounces. On each occasion after the operation the liver was found to extend to the level of the umbilicus, to be smooth and free from tenderness; the urine was frequently examined, and was found occasionally to present a trace of albumin, but usually none. He suffered a good deal from nausea and sickness, occasionally from diarrhœa; and at times had bleeding from the nose. He complained of shortness of breath, cough, and scanty expectoration occasionally tinged or streaked with blood.

The patient grew progressively weaker, latterly very drowsy and quiet, and he died on the 6th November. He was treated mainly with digitalis and iron.

The *autopsy* revealed the following facts. There were old adhesions in both pleuræ, and both lungs were congested and friable in their lower parts. Some old pericardial adhesions also were present. The heart was large and dilated, especially on the right side, weighing seventeen and one-quarter ounces. The aortic valve was thickened and contracted at the edges and incompetent. The mitral orifices were narrowed; and the valves and the chordæ tendineæ were thickened. The abdomen contained five pints of fluid, and presented extensive old adhesions, the capsules of the liver and spleen being much thickened. The liver was large, weighing four pounds, and was in a well-marked "nutmeg" condition; spleen large and firm, weighing seven and three-quarters ounces; kidneys also large and congested. There was œdema of the lower extremities.

Case III.—H. M., a coachman, aged forty six years, was admitted under my care on October 23, 1891. He had been a heavy drinker for years, and eight years ago had suffered from rheumatism, but otherwise seems to have had good health. His present illness had begun five weeks ago with pain after food, and sickness, which symptoms were followed in a short time by a shortness of breath, palpitation, and some cough. He had also been passing more water than usual. During the last week or ten days he had observed swelling of the legs and slight jaundice.

He was a short, florid man, presenting general anasarca, most marked in the legs: enlargement of the abdomen, and distinct icteric tinge. His chest was duly resonant; but over the greater part of both lungs there were rhonchi to be heard, and at the bases slight crepitations. The inspirations were twenty-five in the minute, and he had some cough unattended with expectoration. The cardiac dulness was not appreciably enlarged, but the impulses were heaving and diffused. The action was irregular, and 180 in the minute. A systolic murmur was audible at the apex, and conducted into the axilla; the pulse was small and

feeble, and there was no visible pulsation of arteries; the abdomen was large, and obviously contained fluid, and the liver extended about a couple of inches below the ribs; the urine contained a trace of albumin and a little bile.

During his stay at the hospital he suffered continuously from general anasarca, especially marked in his lower extremities, and his jaundice deepened somewhat; no change took place in the condition of his lungs, but his respirations were usually from thirty to forty in the minute. The cardiac sounds indicated no change, and his pulse, which continued very irregular and feeble, varied from about 140 to 160 in the minute: His abdomen was for a time enlarged owing to increase of fluid in it, and on December 3d measured thirty-nine and one-quarter inches in girth, but subsequently diminished to thirty-seven. There was generally some degree of tenderness in the liver, but no pain; his sickness ceased, but, for some days without any obvious cause he suffered from profuse diarrhœa, and during this time and afterward the urine, which had been abundant, became scanty; the fluid always contained bile, and usually a little albumin, and its specific gravity was for the most part above 1020. Also soon after admission he became delirious, and continued so, seeing animals about him; he was very noisy at times, and occasionally unmanageable. He gradually got weaker, and died on the morning of December 11th.

In addition to medical treatment which varied from time to time, his legs were tapped by means of Southey's tubes, but without any material benefit.

*Autopsy.* General slight jaundice; much œdema of feet and legs; a little fluid in both pleuræ; lungs large, congested, œdematous; a large recent hæmorrhagic infarct in the right. Heart flabby, large and much dilated, weighing eighteen ounces; aortic valves uniformly thickened, and slightly incompetent; mitral valves freely incompetent, owing to great thickening and contraction of flaps and chordæ tendineæ; free regurgitation at tricuspid valve. The abdomen contained about a pint of fluid; liver large, weighing four pounds one ounce, rather deeply jaundiced, and in a fairly advanced nutmeg condition; no appearance of cirrhosis or of dilatation of ducts; spleen very firm and small, weighing only two and one-half ounces; kidneys of natural size and of dark-red color; an old cicatricial infarct in the left.

The few remarks I have to make on the cases I have just narrated will have reference—1, to the ascites; 2, to the cardiac phenomena; and 3, to treatment.

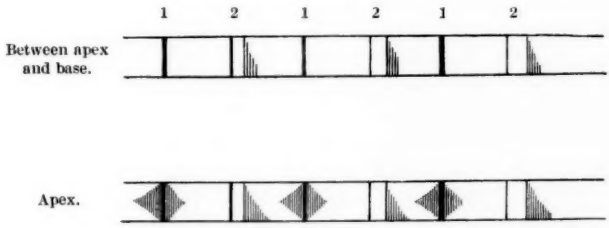
1. It is obvious, as I before observed, that in each of my cases the ascites was excessive in relation to the amount of general anasarca, and that its excess must have been due to the operation of some local cause. It is admitted that the nutmeg liver, after a time, becomes the seat of chronic inflammatory changes which impede the transmission of blood through the organ, and thus tend to cause passive congestion of the tributaries of the portal vein and consequent abdominal dropsy. This is not improbably the explanation of the ascites in my cases. But it seems to me that, even if no such structural impediment were present, there would still be a tendency (in cases of obstructive cardiac or pul-

monary disease, attended with general systemic venous congestion) to a relatively greater degree of sluggishness of blood-flow and of congestion in the portal circulation than elsewhere—owing to the fact that, whilst the blood in this region would be subjected to no greater degree of *vis a tergo* than the blood of other regions, it would, from having to pass through a system of capillary vessels before reaching the cava, suffer in a greater degree from the effect of resistance *a fronte*. It might be replied that the argument tends to show that abdominal dropsy should be present as a physiological condition in all healthy persons, and consequently proves too much. But I do not myself think that this objection holds; for if several streams be flowing with different degrees of velocity and force into a common channel, which is sufficient under ordinary circumstances to allow of the due transmission of their contributions and to duly drain their several watersheds, no flood would be likely to arise. But if this common channel should become partially obstructed, it is clear that the more rapid and forcible streams would discharge themselves in greater degree than the more sluggish and feeble streams, and that the districts which the latter drain would become earlier and more seriously flooded than the others.

My second case during its progress presented in connection with the presence of ascites two or three interesting, though not unusual, clinical phenomena, to which, however, I did not refer in my brief narrative. The first is, that when the abdomen was dropsical, a layer of fluid (which as the patient lay on his back became increasingly thick as one passed from the median line to the right flank) intervened between the liver and the parietes, and could be readily recognized by prodding with the finger perpendicularly inward, and thus first displacing the fluid and then impinging on the hard surface of the liver. The second is, that we could both see and feel a fluid wave, due to each contraction of the right side of the heart, which, commencing in the scorbiculus, spread then in a widening arc, but with diminishing force, over the whole abdominal surface. The third was, that in connection with some not very severe peritonitic symptoms which followed the first and second tapping, we could hear, just below the ensiform cartilage, very distinct coarse crepitation sounds attending the respiratory movements, but best evoked by pressure with the stethoscope.

2. It is an interesting fact that in all three cases there was, in addition to mitral disease (to which no doubt the patient's special symptoms were due), aortic regurgitation, which was either not recognized during life or was recognized with difficulty. The regurgitation must have been very slight, for without exception it was unattended with the characteristic arterial pulsation, with capillary pulsation, or with obvious impairment of the second sound at the right base. The hearts were examined over and over again, both by myself and other competent persons. And

certainly no regurgitant aortic murmur was ever discovered in either of the two fatal cases by any one of us. In the first case the cardiac sounds formed an interesting study: a variable presystolic and asystolic murmur furnished abundant evidence of the presence of both mitral obstruction and mitral regurgitant disease. But the sound indicative of aortic regurgitation might easily have been overlooked or misinterpreted; for it was inaudible at the base, comparatively loud at the apex within the small area to which the true presystolic murmur is limited, and not infrequently blended with this latter into a murmur occupying the whole of the left ventricular diastolic period. But there was reduplication of the second sound of the heart, the second element being due to the closure of the aortic valves. It was this sound which was immediately followed by the diastolic murmur, which murmur (though at the apex apt to be lost in the true presystolic murmur) was audible midway between the apex and base, a point to which the true presystolic murmur did not reach. The following diagram will illustrate my description.




3. It appears to me that in such cases as I have cited the abdominal dropsy does not, as a general rule, call for special treatment. The treatment which is appropriate in obstructive cardiac disease is the treatment appropriate for this particular complication. Rest in bed and the employment of drugs calculated to strengthen the action of the heart tend to cure the ascites, as they do to remove or relieve the patient's other troubles. These measures proved efficacious on two occasions in my first case; and even in my last (which ended fatally) were attended with the almost complete removal of the abdominal accumulation. In some cases, as in my second, tapping will be needed. And there is no more reason why it should be delayed or avoided here than in cases of ascites due to other causes.

# VASOMOTOR ATAXIA: A CONTRIBUTION TO THE SUBJECT OF IDIOSYNCRASIES.[1]

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The present paper is intended merely as a record of personal observations, and presentation of conclusions based thereon; it will not, therefore, refer to facts and theories in literature, though many observations parallel with, and confirmatory of, the views expressed have been found. The exigencies of time necessitate citation of a few only of the cases studied, which, excluding the more numerous instances of slight departure from the norm, altogether number sixty odd, accumulated in hospital and private practice during the course of some eight years; and such reports as are made must be brief. I would request, therefore, that it be assumed, in discussion, that despite brevity of account these cases have been investigated from all standpoints with as much thoroughness as I am capable of, or as the opportunities permitted.

The varying susceptibilities of different individuals, and of the same individual at different times, to the same influences has long been a matter of every-day observation. Of a number of persons exposed to cold and wet at the same time and place, one may have articular rheumatism, another pneumonia; one may contract tonsillitis, another nephritis; others may escape apparently unharmed. Evidently there is something at work in addition to inclement weather and specific microbes; and this something, which is the determining and therefore the principal etiological factor, is special to the individual—is a physical personal equation. We call it, whether exhibited in relation to the exciting causes of disease or to the action of drugs, individual liability, predisposition, idiosyncrasy; and though our terms are singular in type, we recognize that the singularity is relative and may be exhibited by several persons.

For every idiosyncrasy there must be a physiological basis. By comparing the phenomena, special and general, exhibited by a group of persons presenting similar or identical idiosyncrasies, we take a step toward the recognition of the basic physiological conditions.

I would invite attention to an idiosyncrasy of the circulatory mechanism, which, in its extreme degrees, manifests itself in the form of well-recognized symptom-complexes; in its minor degrees gives rise to puzzling manifestations of great variety of detail; and in its least-

[1] Read before the Section of General Medicine of the First Pan-American Medical Congress, held at Washington, D. C., September, 1893.

developed forms often passes unnoticed. For this condition—which seems to depend upon a feebleness in the co-ordinating mechanisms in consequence of which the balance of the cardio vascular action becomes disturbed by influences that in the great majority of persons have no such effect, and greatly disturbed by influences that normally have slight effect, while the restoration of equilibrium is slow and imperfect—I would propose the self explanatory name of *vasomotor ataxia:* ataxia rather than hyperkinesis, or hypokinesis, because excessive vascular dilatation and excessive vascular constriction may be either spasmodic or paretic, or both spasmodic and paretic, as dilator or constrictor nerves, or both, are affected; and even in the extreme and opposite types of vasomotor ataxia, the phenomena, while always more or less paroxysmal, are neither exclusively those of dilatation nor exclusively those of constriction, but both abnormal dilatation and abnormal constriction are usually present in varying degree in the same patient. The influences under which these phenomena are displayed are, more especially, temperature—and cold more than heat—emotion, visceral or internal reflex excitation, and the action of toxic agents formed in the organism or introduced from without.

The most striking and easily recognized phenomena are those exhibited by the heart and by the peripheral vessels (arterioles, capillaries, and venules); but analogy indicates that similar manifestations occur in the vessels of glands and viscera, while certain symptoms are only to be explained by disturbance of cerebral circulation. The stimulus that results in cardiac and vascular disorder may be applied centrally or peripherally, but the defective inhibition upon which the phenomena depend must be relatively central, and is probably the expression of functional or nutritional defect in the great ganglia of the sympathetic system, or in the medullary centres, or in both.

Functional and nutritional disturbance may result in structural, and finally in organic change; but the discovery of gross anatomical change at necropsy would not prove that it had existed from the first. It is likewise to be borne in mind that functional, nutritional, or structural defect in the sympathetic ganglia or nerves may be primary, or the result of primary or secondary disease elsewhere. The phenomena of vasomotor ataxia may thus occur independently, or be merely a part of the symptomatology of functional and organic diseases of various kinds. In either event the mechanism is essentially the same, and it will facilitate study to consider the circulatory symptoms apart from other complicating conditions.

With the pronounced types of vasomotor ataxia, to which at the one extreme—that of vascular relaxation—the name of Graves's disease or exophthalmic goitre, and at the other extreme—that of vascular tetany—the name of Raynaud's disease, local syncope, local asphyxia, acro-asphyxia, symmetrical gangrene, acrosphacelus, etc., have been given, all

are familiar. All are familiar, too, with the association of other phenomena of vasomotor paresis or vasomotor spasm with Graves's disease and with Raynaud's disease. For example, angina pectoris occurs in both, and angioneurotic œdema and spontaneous gangrene have been observed in Graves's disease. As pointing toward more than a superficial or accidental resemblance in such association of the two affections, the following two cases are submitted:

CASE I.[1] *Acro-asphyxia, with intermittent enlargement of thyroid gland, and paroxysmal tachycardia.*—Sarah O'N., unmarried; seamstress; aged twenty-five years; native of Ireland; having fair skin, brown eyes, black hair; was seen at the Philadelphia Polyclinic, April 11, 1892. For three or four months she has had almost constant headache, with occasional dizziness. Vision at times misty. The feet sometimes swell. At times she has pain in the precordium, with cardiac palpitation. These attacks occur paroxysmally. For about two years she has noticed that several times a day, especially if exposed to cold, either by immersion in cold water or otherwise, the fingers suddenly become discolored—purplish. Both extremities are affected at once. The discoloration begins in the palm of the hand, and extends downward. It lasts but a few minutes, and disappears quickly. The first phalanx of the middle finger of the right hand is thickened, the skin glossy, the veins much distended. There is a depressed cicatrix on its inner aspect. The patient states that twelve years ago there was a swelling at this place, which was lanced, and kept on discharging until within a few months, when the sinus finally closed. The bowels are constipated. The patient does not rise at night to micturate. Menstruation is irregular. Examination shows all over the arms mottled areas of irregular distribution, indicating by their varying color, and by the appearance of the distended vessels, both capillary and venous congestion. Over the upper part of the chest, anteriorly and in the back, especially beneath the scapulæ, are congeries of distended superficial venules. The legs and feet appear not to be affected. No lesion of the lungs can be detected. At the first examination of the heart the rate is 96. At the base a soft systolic murmur is heard, more distinctly on the left. In the veins of the neck a marked musical hum is heard, louder on the right. It is continuous, with systolic intensification. The thyroid gland is easily demonstrated, but not markedly enlarged. Hæmoglobin is 65 per cent. by Fleischl's scale; red corpuscles number more than 4,000,000; there is no excess of white cells. Urine is 1018, acid; no albumin, no sugar, no casts, no red cells (Dr. Eshner). The fundus of the eye is normal; there is compound hyperopic astigmatism (Dr. Jackson).

Relief of constipation, together with correction of visual error by glasses apparently relieved the headache. After a few doses of nitroglycerin, the local asphyxia did not return while the drug was taken.

Some three months later the patient returned, complaining of recurrent headache, with attacks of precordial pain and violent palpitation. The nature of these attacks seemed to be that of tachycardia rather than simple palpitation. While under examination the pulse-rate was variable, about 130. The thyroid gland was slightly enlarged, and a bruit could be heard over the gland on auscultation.

Picrotoxin, $\frac{1}{60}$ grain t. d., was prescribed, with apparent relief to headache. During some ten weeks the thyroid was observed to enlarge and diminish irregularly, without reference to menstruation, which occurred twice during the period. The swelling was soft, not expansile, and greatest on the right side. The patient was last seen some four months ago, when the thyroid gland was apparently normal; pulse-rate 96.

CASE II. *Epilepsy; acro asphyxia; enlargement of thyroid gland.*—Mary N., aged nineteen years; domestic, unmarried; of American birth, Irish parent-

[1] *Vide* Philadelphia Polyclinic, June, 1892, p. 89.

age; fair skin, brown hair, blue eyes; seen at the Philadelphia Polyclinic, January 4, 1893; has had mild epileptic paroxysms of about one half-hour's duration once a week, since the preceding October. There is no aura. She screams and turns pale before losing consciousness. The bowels are regular; the menses regular but painful. The patient is subject to paroxysmal flushing, with subjective and objective heat, especially of the face. There are irregular sweats. She has urticaria in summer-time. She is easily excited; and has frequent attacks of palpitation and rapid thumping of the heart. The heart is not enlarged; the impulse is jerky; the rate is 100; the first sound is short, the second sound is accentuated at the aortic cartilage and at mid-sternum. There is a soft systolic murmur over the sternum, near the articulations of the second cartilages; it is not transmitted. The thyroid gland is enlarged, especially in the right lobe; it is soft and pulsating; there is no thrill and no bruit. The hands are of a dusky-blue color, which slowly fades on elevation; the nails are purplish. Upon immersing the hands in ice-cold water they soon become red. If one hand only is placed in the cold water, that one becomes red, the other a deeper blue. Dermographism is marked. Factitious urticaria is produced by pressure, followed by cold.

The patient states that only recently has she noticed occasional blueness of the hands; that it is not constant, and is usually produced by cold, but may come on while at work in a warm room.

There are on the cheeks of this patient three or four small reddish elevations, surrounded by little radiating lines—a star, as it were—of dilated vessels. A number of small telangiectases are found on the arms and breast. She states that she bleeds easily if cut, but blood is stanched in a reasonable time. She frequently bleeds from the nose. No family history is attainable.

Taken by themselves, these two cases might not appear to be of special significance; but to me they were of great interest, because they seemed to supply the links between two groups of cases that had occupied my attention for a number of years, and which I believed to be related to each other, as to Graves's disease in the case of the one group, and to Raynaud's disease in the case of the other group; and thus to complete the chain of observation, as of reasoning. This will become more apparent if I relate briefly, but in some detail, the case that first drew my thoughts to the subject.

Case III.—In February, 1885, Miss X., of American birth and parentage, Hebrew race; fair complexion, brown hair, gray eyes; an intelligent and truthful, and not hysterical young lady, some seventeen or eighteen years of age, apparently in perfect health, was alarmed at a sudden dimness of vision, progressing in the course of a few minutes to total blindness, which lasted "about a second." The return of sight was followed by intense headache, lasting about ten minutes. Ophthalmoscopic examination, some hours afterward, and at different times since, has never detected any abnormality.

Examination of the urine passed the morning following this attack showed the presence of a quantity of albumin too slight to be quantitatively estimated, a few leucocytes, a few uric acid crystals, many red blood-cells, and in one or two fields a hyaline tube-cast, or a mucous cast. This condition lasted for two or three days. The urine was acid in reaction, and 1015 to 1018 specific gravity; the quantity was normal. Inquiry revealed the fact that the patient blushed easily, and that in addition, without known emotional cause, there occurred at times what she termed "burning flashes," in which the skin at various areas, sometimes circumscribed, as to a cheek, sometimes generalized, would for a few minutes, or a few hours, become intensely red, with both subjective and objective sensation of heat. On one or two occasions the peculiar distribution of the red areas and their persistence for a day had led to a false domestic diagnosis of measles. But the repetition of the attacks, their

peculiar development and course, and the absence of all other morbid phenomena, soon proved the error. As a child, too, she was said to have had measles three times and rubella once. In one of these attacks that I saw, as the rash was fading, the skin of the arms, chest, and neck was covered with little pink spots, not elevated above the surface, the largest of which was no larger than an ordinary pin-head; and I was told that the rash began in the same way, but that when at its height it presented either as a uniform scarlet flush, or the mottled appearance simulating measles. On another occasion I saw the patient when the right cheek was the seat of a vivid blush, the left being apparently normal, and was told that the left cheek had been the blushing one some hours earlier. The flushed right cheek had a surface temperature of 97° F., the left cheek 95° F., while the axillary temperature was 98.4° F.

Over the middle portion of the left lower jaw this patient's skin invariably presents during menstruation an area of fixed blushing; that is, it is reddened in an oval patch about two inches long and half an inch wide, the color being deepest in the centre, and fading at the periphery into that of the surrounding skin. Her nails are slightly convex, pink in color, longitudinally striated, and exhibiting crescentic markings. She has been under observation continuously since the attack of blindness recorded, and during that time has presented, in addition to the flushes spoken of, an attack of erythema nodosum; several attacks of urticaria; one attack that I did not see, which appears from her description to have been a circumscript œdema of the arm; and one that I did see, which was circumscript œdema of the calves of the legs. The transient blindness has been repeated, affecting only one eye, however, and there was one attack of hemiopia, likewise transient, in which she did not determine which eye was affected, or whether both were involved. In 1889 an attack occurred, which (my notes being defective) she describes as follows:

"Having been in good health for two years, I awoke one night with a great desire to urinate; this was followed by a feeling of faintness and great pain in the heart—I must have been partly unconscious, as I walked down stairs without remembering how. When I became aware of my surroundings, there was intense itching of the palms of the hands and soles of the feet, and a trembling of the whole body, which, for some minutes, I was unable to control. In the morning there was a red blotchy appearance on the chest, lasting several hours, and welts on the wrists. I felt well, and had no pain. I remember that the urinalysis for the next six months frequently showed albumin, but I felt perfectly well and strong. The rash and the welts occasionally appeared."

The urine is for months normal, but occasionally shows a trace of albumin, uric acid crystals, casts, cylindroids, or hæmocytes. Sometimes all of these will be found together, sometimes albumin only, or blood cells only. General health and strength keep good, the eyes are emmetropic (Dr. Jackson), with large pupils, and the blood is normal. Though there are occasional attacks of palpitation, the heart, and so far as I can determine, the lungs and all the other viscera—for I do not believe there is organic renal disease—are normal. Menstruation, however, is irregular at times, and there is occasional dysmenorrhœa. The attacks described are not related with menstruation. The thyroid gland is demonstrable, but not enlarged.

The family history in this case is of great interest. It can hardly be a series of meaningless coincidences. The patient's father died of acute pneumonia, after having for forty years suffered with pulmonary hemorrhages, attributed to "disease of one lung," of what nature I do not know. Several paternal cousins have leucoderma; one has had renal colic, passing uric acid gravel; another, highly myopic, has obscure symptoms of disturbance of the sympathetic nervous system, diagnosticated by one observer as incipient Graves's disease; another has had chorea, and is very liable to epistaxis and to panaris; another, likewise highly myopic,

has had retinal hemorrhage; another has chilblains every winter, and is subject to sudden syncope from slight indigestion; another has blueness of the hands every winter, with tendency to deep fissuring of the finger-tips, unless constantly protected by woollen mittens; another will get circumscript œdema from slight knocks that in others would pass unnoticed, and that even in him do not cause discoloration of the skin. A paternal aunt, still living, is affected similarly to the father. A brother of the father's died at the age of thirty, of suffocation in the course of a pulmonary hemorrhage. His son has progressive myopia of high type. There is likewise a rheumatic tendency in this family; one of its members has had diabetes mellitus. The patient's mother is living and healthy, at past sixty years of age. Severe mental shock, however, not long ago prostrated her in bed for a few days, during which time the heart's action was feeble, excited, and irregular; the temperature was slightly subnormal; albumin, tube-casts, red and white blood-cells were found in the urine. I am satisfied that she has no organic lesion. Several members of her family have had diabetes mellitus—living, however, to advanced age, and two of her sisters and one niece have had carcinoma of the breast. There is also a gouty and a neurotic heredity in this family.

As further exhibiting the essentially constitutional basis of vasomotor ataxia may be briefly stated:

CASE IV.—A brother of the preceding patient, aged thirty-five years, dark-haired, blue-eyed, has been for some eight years the subject of ophthalmic migraine, and has attacks of spasmodic asthma if exposed to the emanations of feathers, or to moist atmosphere at the seashore. He has hyperopic astigmatism (Dr. Gould). His thyroid gland is slightly enlarged. He exhibits along the borders of the ribs the pecular appearance which I have termed the *costal fringe*, namely, a network of telangiectases, following the outlines of the costal arches. This appearance is found in some cases of hepatic cirrhosis, but this patient's liver is apparently normal. He has no pulmonary or other visceral lesion, but is seized at times with gastric crises (pain relieved by vomiting), that appear to correspond with periods of lithuria and oxaluria. His urine has never shown albumin or casts; and red blood-cells have been found on but one occasion. His reflexes are normal, or perhaps slightly exaggerated.

These two patients, and a sister of theirs who is subject to profuse epistaxis, occurring without apparent cause, but is otherwise healthy, exhibit three symptoms upon which I would lay special stress:

1. *Dermographism.* That is to say if, with a blunt probe, and using very light pressure, letters or other device be traced upon the skin of the patient, especially upon the inner aspect of the limbs, or over the sternum, the tracings soon appear in a rosy-red tint that lasts for some minutes, or even half an hour.

2. *Factitious urticaria.* If in tracing upon the skin one uses a little deeper pressure than before, the red lines soon broaden, and finally the reddened portions show a more or less decided elevation, like the wheals of urticaria. In some cases the red color fades, in others it persists. The

elevation remains in some instances, notably in cases of chorea and of exophthalmic goiter, for several hours. When factitious urticaria is not immediately apparent upon the use of pressure merely, it may in some cases be quickly developed by applying cold to the part, as with a lump of ice; in other cases the application of hot water will cause it to appear. When cold or heat is applied, the wheals are always reddened, and sometimes a diffuse redness that slowly fades is likewise seen upon the intervening skin.

3. *A modified form of Stellwag's eye-sign of exophthalmic goitre.* When the patient looks fixedly before him, and opens the eyes, a distinct white rim of sclera is exposed above the cornea. It may be spontaneously exhibited in the excitement of conversation, or may have to be developed by the physician in the course of examination.

I lay stress upon these signs on account of their occurrence in Graves's disease. Unfortunately I have not been systematically employing these tests for much more than a twelvemonth, during which time I have not seen a large number of typical cases of exophthalmic goitre. I have records, however, of seven undoubted cases (one male, six females), in which dermographism and factitious urticaria were marked; and, indeed, I have never seen factitious urticaria so readily produced, so persistent, or so striking, as in the case of a colored woman with exophthalmic goitre, in the wards of one of my colleagues at the Philadelphia Hospital. I may briefly record in this connection, as a case linking the preceding ones with those to follow, a case from my own service at that hospital:

CASE V. *Exophthalmic goitre with acro-asphyxia.*—(Notes taken by Drs. Claribel Cone and S. Stivers, resident physicians, Philadelphia Hospital, February 23, 1893.) Charles P., aged thirty-three years; waiter; native of Ireland; unmarried. His mother died of cancer of the breast, his maternal grandmother, of cancer of the nose; a maternal cousin, of phthisis. There is no neurosis in the family. The patient had the infective fevers of childhood. He has been a hard drinker. He had syphilis and gonorrhœa about twelve years ago. He has not had rheumatism. When a child he had attacks of palpitation of the heart, which ceased as he grew older. Twelve years ago he was occasionally attacked in the same way. Six years ago, after a debauch, more persistent rapid action of the heart developed, and has continued at intervals since. Attacks may be brought on by his being startled. The cardiac disturbance sometimes prevents sleep. It is accompanied with dyspnœa. There is no cough. For the same length of time he has been very nervous, easily frightened; his hands tremble, and at times there is a general tremor. The cardiac storms and general nervousness develop synchronously. He has occasionally spit blood—not sufficient to cause him to give attention to it. The present attack began about a month before admission. There is no pain, no anæsthesia, no motor paralysis. The eyes were always large, but have been getting more prominent for the last two years. Graefe's and Stellwag's signs are both present. Goitre has appeared and disappeared; no data of this are attainable. At present there is no demonstrable enlargement of the thyroid gland. The pulse-rate varies from 81, under treatment, to 140 without treatment. The cardiac impulse is not strong. There is no murmur. In the vessels of the neck, especially the jugulars, there is a marked musical hum. Examination of the blood shows: Hæmoglobin (Fleischl's scale), 30 per cent.; red corpuscles, 4,036,000;

white cells, 11,000. There is no pulmonary lesion. There is nothing abnormal in the urine. The patient has frequent cold sweats. The skin is usually warm and moist. The hands, from time to time, become bluish and cold. They are always moist. At times, after an attack of coldness and lividity, they become pink and warm. The attacks are independent of weather, and of the temperature of the ward, but can be induced by exposure to cold. The duration is variable. The patient has an irregular temperature, but no relation can be traced between temperature curve and paroxysms of acro-asphyxia. Dermographism and factitious urticaria are marked. The hands immersed in warm water (110° F.), become slightly red in about three minutes. In cold water (40° F.) they become quite red in two minutes. One hand being placed in cold water becomes red; the other, left free, becomes blue. White spots made by pressure on the bluish or reddened skin remain for a long while. Elevation reduces lividity slowly, but has no effect on the pinkish discoloration. The patient exhibits telangiectases at different portions of the trunk, and has a hard, pinkish, sessile growth about the size of a bean, on the left cheek.

Incidentally, it may be remarked that this patient professed to feel better and exhibited slight objective improvement during the administration of desiccated thyroid gland. The only abnormality observed in the urine was during this time, and consisted in an intense blood-red coloration. It did not respond to tests for hæmoglobin, and Dr. John Marshall kindly examined the specimen, and reported the color to be due to a modified form of indican.

Bearing the foregoing case in mind, the observation now to be recorded finds its place and explanation. The case is in many respects similar to one that I observed in 1886, at the Jefferson Medical College Hospital, and in which Prof. Bartholow concurred in my diagnosis of vasomotor paresis, as against cardiac hypertrophy. In the earlier case acro-asphyxia was not present; temperature was elevated during paroxysms of flushing of the face. There was much headache.

CASE VI. *Hæmoptysis; tachycardia; acro-asphyxia.*—I. H., aged sixteen years, of Russian birth and parentage; Hebrew race; dark skin, hair, and eyes; a poor boy, who during the day teaches languages to beginners, and at night, in a cold room, studies to fit himself for college, was sent to me by his attending physician, Dr. C. D. Spivak, February 26, 1893, with a note stating that for a week he had had daily hemorrhages, slight in amount, believed to be pulmonary, the blood being bright red and sometimes mixed with saliva. There was no cough, no expectoration. Physical examination revealed no pulmonary or laryngeal lesion. The heart was rapid (130) and forcible, but not demonstrably enlarged. The first sound was somewhat short, the second sound accentuated. The pulse was tense. The hands were discolored, the terminal phalanges being of a deep purple, the rest of the fingers and the dorsum of the hand being of various shades of pink, red, and blue, the palms being mottled red and blue. Elevation slightly lessened the color, and secured a more even distribution of shades. The thyroid gland was slightly enlarged, and there was a faint hum in the vessels of the neck. The pupils were widely dilated, and there was evidently great eye-strain; the patient complaining of headaches brought on by reading, and the left eye showing a tendency to wander. Later in the case, Dr. George M. Gould kindly examined the eyes, and found a high degree of compound hyperopic astigmatism, the eye-ground being normal. The urine has never contained albumin or casts, and red blood-cells were found on but one occasion.

The patient was put to bed, with regulation of diet and secretions; ice was applied over the heart, and tincture of aconite given until the pulse fell to 60. In the course of a week he was permitted to rise, when the pulse immediately shot up to 100. Dark glasses and paralysis of accommodation, adopted at Dr. Gould's suggestion, failed to quiet the heart. Suitable glasses were then prescribed, and aconite again administered until the pulse, in a

sitting posture, fell to 80. On stopping the aconite, tachycardia again manifested itself. Examination of the urine showed nothing abnormal. Examination of the blood showed corpuscles and hæmoglobin about 75 per cent. The accentuation of the second heart-sound, and the high pulse-tension now received the consideration that perhaps they should have had earlier. Aconite was stopped, and nitroglycerin given in ascending doses until physiological effect was manifested. The pulse-rate fell to 80 in the sitting posture, 90 in the standing position. It was still further increased upon exertion. Aconite was now given in conjunction with nitroglycerin, and tincture of chloride of iron administered concomitantly. Under this treatment, with gradually decreasing doses of aconite and nitroglycerin, the pulse has become steady at about 80. There has been no further hemorrhage. No sign of pulmonary lesion is to be discovered. There has been no history of rheumatism. While in the house, the room being kept warm, the discoloration of the hands faded to a light duskiness. While going about in cold weather, the condition previously described returned. The hands sweat profusely at all times, even in cold weather. Since warm weather has set in the hands have become normal in appearance. The patient exhibits dermographism, factitious urticaria, and the eye sign already described. The pupils are persistently and equally large.

Case VII. *Œdematous acro-asphyxia.*—The brother of the preceding patient, a peddler, a native of Russia, aged twenty-three years; is subject to chilblains. I had one opportunity to examine him—July 17, 1893—a warm day. The hands were of a dusky color, mottled red and bluish; the nails purplish, and exhibiting the peculiar crescentic markings. There was considerable sweating of the hands; he says that they get almost black in cold weather, and sometimes when not cold. At times they suddenly swell, and then often become dark blue. The swelling lasts a few hours, rarely a day. Sometimes there are white patches on the hands when they are otherwise blue. The duskiness present on the occasion of my examination lessened on elevation. The heart was strong; there was no murmur; pulse 84 in sitting posture, somewhat tense.

There was mydriasis; the sclerotic was exposed upon opening the eyes. Dermographism and factitious urticaria were present. The hands trembled on being held out for a short time. This was said to be of frequent occurrence. The thyroid gland was not demonstrable. There was no history of cardiac palpitation. This patient likewise has hyperopic astigmatism.

Additional cases might be narrated were it necessary (and some will be published hereafter), in which what we may, for convenience of designation, call the Graves group of phenomena and the Raynaud group of phenomena are mingled in varying degree. But those selected are sufficiently indicative of the gradual transitions by which two diseases, apparently so opposite in their nature, may be brought under one clinical generalization. Leaving now the Graves group, and those cases that stand on the far side of it, I desire to briefly submit some interesting cases on what we may call the hither side of the Raynaud phenomena; and it will be found, I think, that gradual transitions may also be traced here down to normality, which, like the sigil, completes our ring.

Case VIII. *Anæmia; hæmatemesis; gastric ulcer* (?); *acro-asphyxia.*—Mary T., aged seventeen years; of American birth and Irish parentage; fair skin, dark hair, gray eyes; syphilitic inheritance; was under my care in 1888, for profound anæmia with hæmatemesis and symptoms suggestive of gastric ulcer, and recovered under treatment based on such a diagnosis. Early last winter she returned, rosy in hue, without anæmia, but again complaining of spitting blood. Her hands were of a deep-blue color, which was

unaffected by position. I sent her to a friend to have her hands sketched, and on the way to his office they resumed a normal color. Frequently during the cold weather they would become red or blue, or mottled red and blue. On severe exposure they once became dead white, and were excessively cold. When blue, the hands are subjectively and objectively cold; when red they are objectively warm, but subjectively cold. The same changes take place in the feet. Both hands and feet sweat profusely. Capillary pulse was seen in the lips and nails. Occasionally she has a film before her eyes. There is no lesion of the eye-ground, but glasses are worn for relief of headache (myopic astigmatism, Dr. Jackson). There is no cardiac or pulmonary lesion. The thyroid gland is not abnormal to palpation. The pulse is 80, and of low tension as shown by sphygmogram. Examination of the blood showed hæmoglobin, 80 per cent; corpuscles normal. The urine contained a few red corpuscles.

CASE IX. *Hæmoptysis; tuberculosis; acro-asphyxia.*—M. M., a drug clerk, a native of Russia, of fair complexion, light hair, blue eyes, applied at the Philadelphia Polyclinic, February, 1893, on account of pulmonary hemorrhages. Attention was attracted to the blueness of his hands. This was said to have manifested itself while out of doors during cold weather for several years, and to slowly fade into a pinkish tint while the patient remained indoors. Elevation caused very gradual disappearance of the discoloration. The heart was normal. There was found slight dulness and crackling at the left apex, and large and small mucous râles over both sides of the chest. After repeated examination of the sputa a few tubercle bacilli were found. The patient stated that his mother's hands were similar to his, as were also those of one sister and one brother younger than himself. His father and his elder brothers and sisters did not exhibit it. The sister and brother who had blue hands were quite subject to bleeding from the nose; with the sister, epistaxis ceased with her first pregnancy.

This patient showed dermographism and factitious urticaria. There was no cardiac lesion, and no abnormality of the thyroid gland. His hands and feet were constantly sweating both in hot and cold weather. He had paroxysms of polyuria. His urine while under observation showed occasionally red blood-cells, no albumin, no sugar, no excess of urates. He has myopic astigmatism (Dr. Jackson). Under treatment, with rest and calcium chloride, the pulmonary hemorrhages ceased, and the hands improved while kept wrapped in cotton, and treated daily with a descending galvanic current.

In these cases of blue hands, and in many others of which I have record, there is a striking series of phenomena to be observed, which I have not thought it necessary to relate in detail in each case. If, during a period of quiescence, that is to say, in warm weather, or after the effect of treatment or of the warmth of the room has made the hands somewhat less blue, one hand be placed in ice-water, it will, in a few minutes, become a bright red, while the other hand, not exposed to local cold, becomes a deep blue. Control observations on normal hands do not show the same result. If, during an attack of local asphyxia, the blue hands be placed in warm water, one of two things may occur: 1st. The hands may quickly become red. In that event, on removal from the warm water the red fades to a dead-white, then the normal color returns, then an abnormal blueness. Stroking the hands, either up or down, increases the rapidity with which the whiteness develops—and in some few mild cases, stroking alone, without resorting to immersion in cold water, will produce it. 2d. In other cases the hands become white on immersion in warm water, and red or pink when removed

into the air. In all cases, whether the hands be blue, pink, red, or mottled, pressure produces a whiteness which does not quickly disappear. In some cases the experiment was made of immersing the blue hands, during an attack, in cold water. They would either become red and warm, or almost black and intensely cold.

I have alluded to the appearance of the finger-nails. Setting aside the well-known appearance in typical Raynaud's disease and that produced by panaris, to which latter affection these subjects seem quite prone—I have observed many varieties that fall into two groups: a clubbed finger-end, with broad and flat, or Hippocratic parrot-beak nail; and secondly, a tapering finger-end, with long and transversely curved nail. The nails are usually striated, sometimes thickly ridged longitudinally. They are sometimes a bluish, sometimes a purplish, sometimes a pink color. The broad, flat nails are more frequently a leaden blue; the long nails, more often pink. Both the pink and the blue nails exhibit crescentic markings. In the pink nails there is usually one narrow and deep-red crescent between two wider and whitish crescents near the tip. The flat, leaden-colored nails usually show one wide, whitish crescent centrally. These markings differ from the whitish or reddish discoloration produced by varying pressure in normal persons.

To resume the development of our circle of cases, I have now to submit two instances that would be merely curious in themselves, but find place and explanation through each other, especially in relation with the cases of hæmoptysis and hæmatemesis recorded, and with the occurrence of blood-spitting in Graves's disease. I have seen two cases of hæmoptysis in exophthalmic goiter, in both of which pulmonary tuberculosis finally developed.

CASE X. *Paroxysmal numbness of extremities; chlorosis; hemoptysis; pulmonary tuberculosis; acute hemorrhagic varices* (?) *of pharynx.*—Miss V., of American birth and parentage, Scotch descent; fair complexion, brown-gold hair, gray-brown eyes; not hysterical; first had indications of numbness in the left hand and arm on nearing the menstrual period at the age of fourteen years. Previous to this she had enjoyed good health, with the exception of an abscess on the left side of the neck, at the age of eight, and frequent paroxysms of hard, barking cough. She was subject in warm weather to an eruption on the hands, which was relieved by applications of black wash. The frequency of the attacks of numbness and their extent continued to increase until the age of twenty, when the patient was treated for anæmia. She had then had no menstrual period for six months, had lost flesh, was very pale, had cough, and constant headache. At this time the patient came under my care (1883) for pulmonary hemorrhages with fever, and physical signs of tuberculous infiltration of left apex. Under treatment complete recovery ensued; the menses appeared and the general tone of the health was restored. The numbness disappeared for about four years; when the attacks returned, and still occur, with not so much frequency but more severity, and affecting likewise the tongue and throat. The face becomes very pale; the arm and hand seem perfectly lifeless, and can be placed in almost boiling water. When feeling is restored a violent headache follows, and the patient is weak for two days. The attacks generally follow disorder of the stomach or mental disturbance, or occur about the menstrual period. At times, not connected with the attacks of numbness,

there occur in the throat during glutition, what she terms "blood-blisters," which consist of little bluish elevations about the size of half-a-pea, and apparently of the nature of varices, that when ruptured, artificially or spontaneously, discharge black blood. Her sister is subject to similar but larger "blood-blisters," which, however, do not always discharge themselves, and it is said that it is sometimes necessary to puncture them to prevent suffocation. Her grandmother was liable to attacks of numbness, from about the age of thirty until the age of eighty.

This patient exhibits dermographism, factitious urticaria, and the eye-sign. Her nails are curved, pink, marked with crescents. She has hyperopic astigmatism (Dr. Turnbull). The thyroid gland is not enlarged; there is no heart lesion.

CASE XI. *Blue œdema of pharynx and uvula, with urticaria of fundament; angio-neurotic œdema of trunk and face; paroxysmal tachycardia.*—Mrs. B., aged sixty years, on June 26, 1892, complained of sudden dyspnœa of a few hours' duration, and soreness of the throat. For a day the patient has had urticaria of the fundament. She is subject to this form of urticaria at irregular intervals. The uvula is swollen, more upon the left, and the mucous membrane is of a grayish-blue color; the left posterior palatine fold is similarly discolored and œdematous. The swellings pit upon pressure. Scarification gives exit to less than a drachm of black blood. Two or three days ago the patient had, without known exciting cause, an attack of sudden violent beating of the heart. She became quite faint, and lay down, and in the course of about half an hour the heart became quiet. An attack less violent and of shorter duration occurred later in the day. The attacks were accompanied with flushing and heat of the entire body. The patient has not menstruated for some years. She has had similar attacks previouly. The first followed a mental shock twenty years ago. The attacks usually last twenty-four hours. Different portions of the body are swollen. Once the œdema occupied half the face; at another time half the abdomen. On three occasions it has begun in half the lip, afterwards extending to the whole structure. The tongue has been swollen.

Her urine, examined on the day following the attack reported, was amber in color, turbid, acid reaction, specific gravity 1019, containing no albumin, no sugar; leucocytes and red cells were present.

The patient exhibits dermographism and factitious urticaria. She is not specially susceptible to cold. Her family, while long-lived, is gouty and neurotic. One of her daughters has aggravated hysteria. One sister has diabetes mellitus. This sister likewise exhibits dermographism and factitious urticaria, and as a child and young woman was subject to paroxysmal flushing of one cheek.

The following case will serve as a transition to a comparatively large group, in which digestive disorders are prominent.

CASE XII. *Hysteria; burning and coldness of extremities; herpetic (?) eruption; hungry dyspepsia; exophthalmos.*—July 11, 1892. Mrs. R. O'D., a typical brunette, of American birth, French parentage, aged twenty-five years; complains of subjective and objective coldness of the legs below the knee, for a week. There is cold perspiration of the feet. For a year the patient has been feeling worn out and languid. During this time the hands have been swollen, red, and burning when she rises in the morning. The redness passes off quickly. Sometimes there is a similar condition for half an hour toward evening. The patient is hysterical and easily frightened—the heart palpitates violently when she is nervous or excited. For three months subjective vertigo has occurred at irregular intervals. There is no dimness of vision; she sees neither flashes of light nor dark specks. Ten years ago she had "fainting spells," in which, however, she did not lose consciousness. She became dizzy, then clenched her teeth and hands, and fell; the image of the last object seen remained impressed on the retina. The attack lasted a few minutes; there was no convulsion, no subsequent drowsiness. There have been six such

attacks in one day; they have become less frequent since marriage; the last was six months ago.

About a year ago there would, from time to time, appear on the legs and disappear after about two days, a papulo-vesicular eruption associated with itching. It did not pustulate and dried without scabbing. The bowels are constipated. There is headache. Sometimes there is pain referred to the stomach and relieved by eating. There is no nausea, no vomiting, no pyrosis. Appetite is excessive. There is no polydipsia. The urine is excessive in quantity, and the patient rises at night to urinate. Menstruation is irregular. The eyes are prominent, the eyelids tremble when closed. The sclera is exposed when the eyes are opened. The reflexes are all exaggerated. The heart is irregular, not specially rapid; no murmur. The thyroid gland is not enlarged. Urine: acid, 1013, no albumin, no sugar; numerous disks that may be decolorized red cells. (Dr. Eshner.)

The phenomena of disturbed and incoördinate circulation are often even more strikingly manifested in the cases diagnosticated of recent years as "neurotic dyspepsia" and "neurasthenia." In this connection I will briefly enumerate the salient features only, of two additional cases.

CASE XIII. *Neurasthenia; lithæmia; vertigo; membranous enteritis.*—Mr. J., aged thirty years; attorney; American Hyperopic astigmatism; nausea; no vomiting; paroxysms of vertigo, with pallor, chilliness, and sweating; aggravated neurotic dyspepsia; lavage proves absence of morbid secretion; emaciation; inability to attend to business; morbid attention to symptoms; no heart or lung lesion; throbbing and murmur in abdominal aorta; exaggerated reflexes; mottled hands; pink, crescent-marked nails; dermographism. factitious urticaria; eye-sign; paroxysms of polyuria. Urine contains no albumin, no sugar; at times leucocytes, red cells, uric acid, calcium oxalate, phosphates. Patient has membranous enteritis. Has had attacks of urticaria; is extremely susceptible to both heat and cold; hands and feet frequently become cold without apparent cause. His child has a curious mottling of the skin of the trunk and limbs that resembles measles. At times it is of a vivid red, at others it fades to a delicate pink or faint brown.

CASE XIV. *Hysteria in a male, with neurotic dyspepsia, hæmatemesis, paroxysmal flushing, and sexual crises.*—The principal points in this case, of which space forbids a full report at present, are as follows: The patient, a merchant, aged forty-five years, and happily married, is highly emotional and of an hysterical family. He is stout, heavily built, with red cheeks, and dusky-pink hands. His nails are of the leaden-blue variety. Dermographism, the eye-sign, and the costal fringe are present. Factitious urticaria can readily be produced, and the patient has had hives repeatedly. He is quite susceptible to moderate heat, flushing and perspiring when others feel comfortable. He has a habit of working feverishly, and is an interminable talker. After a period of overwork his digestion fails. He has burning pain in the stomach, with excessive thirst, and inability to retain anything except iced liquids. There are crises of gastric and abdominal cramp with vomiting—at times vomiting of blood—with serous diarrhœa, and at times passage of membrane. He does not use alcohol or tobacco, and always has been chaste. At times when suffering with indigestion, he will have sudden sensations of heat in the head and coldness below the knees; or general heat followed by chilliness; which, as he lives in a malarious region, has been called malaria. A peculiarly distressing form of the paroxysm is a feeling of heat beginning at the navel and spreading over the body, with pain in the testicles and unnatural sexual imaginings provoked by the sight of a strange man or woman "perhaps ugly as Satan;" his face becomes dusky red and his whole body trembles. This is followed by insomnia, anorexia nervosa, and finally for two or three nights by excessive nocturnal micturition, the urine being colorless as water. Such urine has a specific gravity of about 1002, and contains nothing abnormal. His ordinary urine contains neither albumin nor sugar. On two occa

sions colorless blood-cells were found in large quantities. His blood is apparently normal, and when examined in Philadelphia during a paroxysm of subjective heat, without elevation of general temperature, malarial organisms could not be found. Lavage proved entire absence of gastric catarrh, and examination of stomach-contents after test-breakfast showed absence of free acid with diminished total acidity. The eyes are normal. The knee-jerks are sluggish. The heart is slow (60) and feeble; dilatation not demonstrable. There are attacks of palpitation with dyspnœa. The abdomen is not sensitive to pressure. Hepatic dulness is normal. The splenic dulness is not enlarged.

In some cases of vasomotor ataxia there is a pronounced idiosyncrasy toward drugs; the most remarkable instance I have seen being the following:

CASE XV. *Paroxysmal headache and vertigo; circumscript œdema caused by strychnine and by picrotoxin.*—Mrs. E. S., aged forty-seven years; of American nativity and parentage; dark hair and eyes; full habit, flushed face; was seen in April, 1890. She complained of paroxysmal headache, subjective vertigo, and flushes of heat; the symptoms being of several years' duration. There is no visual disturbance. Headache and vertigo occur together or independently. The headache is not localized, but sometimes there is a feeling as of whirling inside the skull, in the vertical region. At times there is a sensation as of cold water being poured down the back. There is no rheumatic or other personal or family morbid history. The patient is regular in menstruation. There is no indigestion, but the bowels are inclined to be constipated. The thyroid gland is not enlarged; there is no thrill or bruit. There has been no urticaria, nor can factitious urticaria be produced. Dermographism is marked. The nails are pink and purple; they are striated and exhibit pink and white crescents. The hands are always warm, frequently sweating. The feet are cold even in warm weather; at times there are paroxysms of icy coldness, without loss of sensation or change of color. The urine is scanty, less than a quart in twenty-four hours; it contains nothing abnormal. The pupils are much dilated. Dr. Hansell examined the eyes, and reports "presbyopia, no lesion of fundus, veins overfilled." The heart is slow and steady (rate 60), the pulse is full but not strong; superficial veins are not prominent. Strychnine ($\frac{1}{60}$ grain t. d.) administered medicinally caused marked œdema of the face. The patient recalled a previous experience of the same kind. Nux vomica and picrotoxin caused similar effects. Hyoscyamine relieved the headaches; alkaline diuretics increased the urine. The patient improved, but passed out of observation. August 31, 1893, she reported at request. She is going through the menopause. The flushes of heat are more frequent. The head, neck, chest, and arms to the finger-tips become red. The redness passes off in a few minutes. Sometimes it is accompanied by a numbness of the left hand and arm, and tingling with coldness in the last two phalanges of all the fingers. Sometimes the numbness will last for two hours after the redness has disappeared. A second flushing may occur before the numbness ceases. There is no periodicity in these occurrences. Perhaps they are worse when constipation exists. The hands are usually warm and moist, the feet cold. Immersing one hand in ice-water it becomes quite red and slightly swollen. The wrist and forearm become blue in patches, with marked distention of venules. The hand is objectively cold, subjectively warm. The other hand is not changed in color, but quite cold. On removing the reddened hand from the cold water the finger-tips first become white and numb, but after a few minutes redness returns, with a sensation of pins and needles, and both subjective and objective warmth.

Not now to detail additional instances, it may be stated that among other morbid associations found in cases of the same general character as those reported have been ecchymoses, petechiæ, hæmaturia, retinal

hemorrhage, organic heart lesion, organic kidney lesion, chorea, rheumatism, hay fever, paroxysmal engorgement of turbinate bodies, angina pectoris and pseudo-angina and glycosuria. In one case hæmoptysis occurred only during epileptic paroxysms; in another case of epilepsy, tachycardia and flushed face accompanied the convulsion. In both these cases there was a soft enlargement of the thyroid gland.

The obscurity in which the pathology of diseases of the sympathetic, or, to use Gaskell's term, the visceral nervous system, is still involved, cautions against premature assertion of other than clinical facts.

I believe that the phenomena herewith submitted for consideration are of considerable clinical significance.

Leaving out of consideration for the present, the diseases other than exophthalmic goitre (acromegalia, myxœdema) known to be associated with abnormality of the thyroid gland, there are four affections of great moment in which functional or structural alteration of some portion of the visceral nervous system is an important element, if not the essential feature. These are Graves's disease, Raynaud's disease, Addison's disease, and certain forms of diabetes mellitus.

The cases here reported show the existence of lesser degrees of disturbance of that system; and indicate that in some instances, at least, there is a congenital tendency to such disturbance. They suggest, moreover, that this congenital want of balance in the circulatory apparatus may be the germ from which, under the fructifying influence of various exciting causes, the more serious disorders develop. Thus mental or even physical shock in a subject of congenital vasomotor ataxia might cause the sudden development of exophthalmic goitre; and an exposure to cold from which a normal individual would quickly react, causes, in the subjects of this condition, local asphyxia, chilblains, frost-bite, or even extensive gangrene. So too, slight indigestion, itself the result of influences that would be ineffectual in a normal individual, may, in the subjects of vasomotor ataxia, induce crises of vertigo, migraine, syncope, or even paroxysms of epilepsy. And similarly, other sources of peripheral irritation—eye-strain, nasal abnormity, exposure to pollen, and the like, result in the production of an exaggerated reaction. The relationship of hay fever with the group of cases under consideration, may be best exhibited by comparing two of the descriptive names it has received—"idiosyncratic coryza" (J. Solis-Cohen) and "periodic vasomotor coryza" (J. N. Mackenzie). One of my patients with blue hands, was compelled to give up his position in a drug house because of his excessive susceptibility to ipecacuanha.

The occurrence of diabetes mellitus in members of the families of patients exhibiting the phenomena of vasomotor ataxia; of intermittent glycosuria in one of my cases of menstrual migraine with urticaria and almost constant flushing of the face; and of intermittent polyuria in

many of my cases, are circumstances worthy of note—especially in relation with the occurrence of glycosuria in some cases of Graves's disease, and with the investigations of Thiroloix upon pancreatic diabetes.

The tendency to hemorrhage must not be overlooked, especially in connection with the diagnosis of pulmonary tuberculosis, of gastric ulcer, and of hypertrophy of the heart. Cases such as those I have reported may develop tuberculosis or cardiac hypertrophy, but these conditions need not necessarily be present at the time of hemorrhage, or later. I would call especial attention to the extraordinary frequency with which, in cases of vasomotor ataxia, red blood-cells are found in urine not discolored—a fact rendered significant to my mind by personal observation of hæmaturia in a case of undeveloped Graves's disease that later exhibited the full complexus of symptoms, and by the records of hæmaturia and hæmoglobinuria in Raynaud's disease. Unfortunately, the single case of paroxysmal hæmoglobinuria from cold that has come under my observation was not studied from the standpoint of the present paper, and is not available for comparison. In this connection, too, an interesting relation with hæmophilia, and with the purpuric group of affections is suggested; but it would not be advisable at present to more than indicate this subject.

The frequent association of refractive errors, and especially of hyperopic astigmatism, with instability of the circulatory equilibrium, raises the question whether the ocular defects are to be classed in the category of exciting causes acting by reflected irritation, or whether there is a more fundamental relation. I am inclined to the opinion that abnormity of circulation and nutrition bears a causative relation to the ametropia. The eye-strain may then react additionally upon the centres, increasing their irritability.

Finally, as exemplified by the case which first drew my attention to the subject (Case III.), and by the case last reported (Case XV.), we must recognize a class of cases to which, as yet, no definite nosological place has been given, and in which a varied symptomatology of circulatory disorder cannot be referred to disease of any organ; though lesion of the digestive tract, of the kidney, of the heart, or even cerebral or spinal lesion may be suggested. For these cases, depending as they must, upon a want of control in the nervous system governing the calibre and tension of the vessels, a defect clearly of inhibition, and by the radius of its effects evidently central in location, it seems to me that the most appropriate name is *vasomotor ataxia.*

## SUMMARY.

1. By the term *vasomotor ataxia* it is proposed to designate the condition of instability of the mechanism of circulation present in certain persons and characterized by abnormal readiness of disturbance with

tardiness of restoration, of the equilibrium of the cardio-vascular apparatus. The manifestations are most strikingly displayed by the heart and by the peripheral vessels of the extremities, but analogy indicates the occurrence of similar phenomena in the vessels of the glands and of the viscera, more especially in those of the kidney, of the gastro-intestinal tract, and of the brain. They may occur apparently spontaneously, but often there is a recognizable exciting cause. Among the influences acting as excitants, are temperature, especially cold; toxic agents formed in the body, or introduced from without; visceral or internal reflex excitation; and emotion. The stimulus may be applied centrally or peripherally, but in either case the resulting phenomena indicate a defect of central inhibition; the expression, probably, of functional or nutritional aberration in the great ganglia of the visceral nervous system, in the medullary centres, or in both. The morbid anatomy is uncertain, and the results of necropsies necessarily inconclusive.

2. Vasomotor ataxia may be acquired as a sequela of disease; in many cases it is congenital; in some cases inherited; the condition is not rarely present in several members of a family.

3. In some cases the phenomena are of paretic, in others of spasmodic character. Usually the two kinds of phenomena are displayed in varying degree in the same patient. Whether spasmodic or paretic the symptoms are suggestive of incoördination. They are always in some degree paroxysmal.

4. In exophthalmic goitre, especially such cases as are produced by emotion or are markedly intermittent, is found the extreme type of the "relaxing" variety of vasomotor ataxia.

5. The form of Raynaud's disease, known as "local syncope" furnishes an extreme type of the "constrictive" variety; while "local asphyxia" exhibits phenomena of both abnormal relaxation and abnormal constriction of the vessels.

6. Between these extremes are numberless gradations down to the slightest departure from normality; while even the extreme symptom-groups represent merely exaggerations of phenomena that under certain conditions occur in normal individuals.

7. Dermographism is an essential feature of vasomotor ataxia, and in most cases factitious urticaria can be readily produced by cold or by pressure or by both; mottlings of the skin, certain peculiar markings of the nails, telangiectases, and stigmata are common.

8. There is usually a hemorrhagic tendency, as shown by ecchymoses, petechiæ, epistaxis, hæmoptysis, hæmatemesis, hæmaturia, and retinal hemorrhage.

9. Even in the absence of hæmaturia, red blood-cells are often found in the urine; uric acid, urates, and oxalates are likewise common; the

presence of albumin, tube-casts, and cylindroids is less common, and is usually intermittent. Glycosuria has been observed.

10. In many striking cases there has appeared to be morbid alteration of the thyroid gland.

11. The action of the heart is usually rapid, irregular, and easily disturbed; palpitation is common, and intermittent tachycardia has been noticed. Hæmic and functional murmurs are not uncommon.

12. Among other symptoms and morbid associations observed are anæmia, hysteria, drug idiosyncrasies, urticaria, local œdema, hyperidrosis, angina pectoris and pseudo-angina, organic heart disease, pulmonary tuberculosis, asthma, hay fever, vertigo, migraine and other forms of headache, transient hemiopia and other visual disturbance, persistent mydriasis, astigmatism, myopia, hyperopia, menstrual irregularities, intermittent polyuria, rheumatism, rheumatoid arthritis, contractures of digits, chorea, epilepsy, neurasthenia, neurotic dyspepsia, gastralgia, enteralgia and membranous enteritis—most of which are doubtless fundamentally related, as effects of a common cause, or as secondary results.

13. In making the diagnosis of simple vasomotor ataxia, it is necessary to exclude primary organic disease. The occurrence of such disease later does not invalidate the original diagnosis. The development of pulmonary tuberculosis in some cases is probably a sequence of vascular and trophic disturbance in the lung. Cardiac hypertrophy and renal lesion may likewise be among the results of disordered circulation.

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## TOXÆMIA OF PREGNANCY: ITS DIAGNOSIS AND TREATMENT.[1]

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By the term *toxæmia of pregnancy* we understand a condition occurring in the pregnant woman in which toxic material is present in the body in excess. There can be no nutrition without the production of waste, and when the dual existence in the body of the pregnant patient is considered, it is not strange that an additional quantity of waste products is present. The excretion of this material is effected largely through the agency of the kidneys, and hence attention was first attracted by those cases where kidney failure was the first and prominent symptom; but as our knowledge of pathology is increased, we see that

[1] Read before the Obstetrical Section, New York Academy of Medicine, October 26, 1893.

the kidneys are but partially involved, and that we must look farther in order to understand the condition.

The mode of production of the toxins, or poisonous waste, which threaten the pregnant woman, is not clearly explained. The usual metabolic processes account for a portion of the material present, while a certain number of cases point strongly to an acute intoxication with the products of bacteria. While the chain of evidence in the latter is not complete, they offer a most suggestive explanation for conditions hitherto not understood. It is the purpose of the present paper to consider methods of clinical investigation which have been found useful in the diagnosis of toxæmia, to mention agencies proven efficient in treatment, and to report illustrative cases.

The clinical investigation of the action of the kidneys during pregnancy has received so much attention that we omit reference to methods of examination commonly in use. It is especially important that the amount of urine secreted be carefully estimated; and while this is practicable in hospitals, ingenuity and patience must be exercised in private cases where a trained nurse is not at hand. The value of microscopic examination of urinary sediment can scarcely be overestimated in the study of pregnant patients. In the cases furnishing a basis for this paper we have examined the urine to ascertain its specific gravity, color, reaction, the presence or absence of albumin, of glucose, lactose, and urea. The two constituents especially important I consider to be urea and sugar or acetone.

As regards the examination for urea, the method is based upon the action of bromine upon sodium hydrate, the urinometer employed being that designed by Lyons. The significance of urea in the urine during pregnancy lies in the fact that it furnishes an index of the amount of waste which the patient is excreting. The literature of the subject furnishes abundant proof that solutions of urea may be injected into animals without causing convulsions; it is also true that a patient may endure a temporary suppression of urine which is almost complete, may escape convulsions, and recover; but the fact remains that the percentage of urea in the urine of the pregnant woman is a valuable indication of the efficiency of her excretion by means of the kidneys. It has been my custom to estimate the percentage of urea before and after labor, and wherever the percentage of urea has fallen below 1.5 we have found occasion to stimulate the patient's excretory processes, with a distinctly favorable result in all cases where symptoms of toxæmia were present.

The following fatal case of eclampsia well illustrates the fact that eclampsia may occur while the urine shows little abnormality, except deficient urea:

S. H., colored, aged nineteen, was seen by the resident physician of the Jefferson Maternity on June 21st at her home. She was pregnant

for the first time, in the ninth month, her fœtus occupying the first position. The patient's legs were very œdematous, tense, pitting upon pressure; the right labium was enlarged to the size of an orange, and the patient complained of frequent micturition, constipation, and great discomfort. She was ordered a saline purge daily, and Basham's mixture as a tonic. The resident physician was again summoned to the patient on June 25th, finding her in labor. As she then consented to go to a hospital, she was brought to the Maternity in an ambulance. Her labor was rapid, although the head remained upon the perineum for about an hour, while the labia became exceedingly œdematous. The child was a female, weighing six pounds, and apparently healthy. Labor terminated at 9.40 in the evening; at 1.40 the next morning convulsions occurred; these were treated by hot packs, chloral and bromide, digitalis, calomel, and other agencies, as indicated by symptoms. The patient's convulsions continued, and death occurred fifteen days after her delivery. A post-mortem examination was unfortunately impossible. An examination of her urine was made during the time of her eclampsia, and before eliminative treatment had modified her condition. Its results are appended:

*Chemical.*

| Date. | Color. | Specific gravity. | Reaction. | Chlorides. | Serum albumin. | Sugar. | Urea. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| June 26 | Yellow. | 1002 | Acid. | Normal. | 50 ct.gm. to litre. | None. | 0.2 per ct. | |
| " 27 | Yellow. | 1004 | " | " | 25 ct.gm. | " | 0.8 " | 12.30 A.M. |
| " 27 | Yellow. | 1008 | " | " | Trace. | " | 1.4 " | 4 A.M. |
| " 27 | Reddish-yellow. | 1012 | " | " | Trace. | " | 1.4 " | 3 P.M. |
| " 28 | Reddish-yellow. | 1004 | " | " | None. | " | 2.1 " | |

*Microscopical.*

During the first day of attack the urine contained a few leucocytes, or pus-cells; amorphous urates; a few crystals of calcium phosphates. Leucocytes disappeared in later examinations. The usual bacteria were found; in the first slide examined there was *one* compound granular cast. As a whole, the urine was that of the ordinary pregnant woman, with a lower percentage of urea.

In 84 cases in which a total of 564 examinations was made (*i. e.*, 331 before labor and 233 after parturition) the average percentage of urea was found to be 1.4 per cent. before labor. It was noticed that in the majority of cases the amount of urea increased after the delivery of the patient, the average being 1.9 per cent. On the other hand, marked diminution in the quantity of urea occurred only in cases either having, or threatened with, eclampsia, or manifesting symptoms of marked toxæmia.[1]

Symptoms of toxæmia which called for active treatment were a gradual diminution in the excretions of the patient, both solid and liquid; diminu-

[1] The urinalysis in these cases was the work of Dr. Wm. H. Wells, Assistant Demonstrator Clinical Obstetrics, Jefferson Medical College.

tion in appetite, with complaint of slight nausea or gastric distress; headache, a clammy skin, or, in some instances, a dry skin with deficient perspiration, and lassitude, mental and physical. The patients under observation were all expected to do light housework up to the time of labor, and hence a good opportunity was afforded to judge of the occurrence of lassitude. The case of S. H., just narrated, afforded no such opportunity for diagnosis, as she entered the Maternity already in labor.

In the study of these cases we have not regarded the presence or absence of serum albumin as indicating toxæmia. Where a microscopic examination of the urine showed the presence of casts and epithelium, the concurrent presence of albumin was, of course, significant; Esbbach's albuminometer we found convenient and practically accurate; but where the microscope failed to find pathological elements, and albumin was present, it was not regarded of importance. In about one-half of the patients, sugar was present at irregular intervals during pregnancy and the puerperal state. It was found in small quantity, and usually in the form of lactose or glucose. The test most useful in its determination was that of fermentation; subnitrate of bismuth and the use of Fehling's solution were also regarded as valuable adjuncts. The presence of glucose and lactose bore no direct relation, so far as we could observe, to a toxic condition of the patient. Lactose was frequently more abundant as the secretion of milk became established. In cases of toxæmia, however, glucose was present, and possibly acetone would have developed had excretion not been freely stimulated.

Of especial interest in considering the question of toxæmia in the pregnant and puerperal state is the relation which bacteria and their products may bear to the pathological condition present. The following case furnishes an illustration in point:

A. F., aged twenty-one years, colored, a servant woman, was illegitimately pregnant for the second time. She was admitted to the Maternity April 16th, and performed the portion of household work assigned to her in apparent good health. Examination of her urine revealed nothing indicating an abnormal condition. An examination of the genital tract gave evidence that the patient had at some time suffered from gonorrhœa, although no acute process was then present. She was delivered on May 13th, after a spontaneous labor of twelve hours. A laceration of the mucous membrane of the vagina occurred, which was thoroughly douched with a bichloride of mercury solution, 1 : 4000, and dusted with iodoform. Her child, a female, weighed six pounds and four ounces, and was in good condition. The placenta was remarkable for the abundance of calcareous material contained in it. Nothing abnormal occurred in the condition of the patient until the seventh day after delivery, when she had a chill, and her temperature rose to 105.2° F. An examination of her urine soon after delivery revealed the presence of pus. The bladder was accordingly douched with creolin mixture, and the patient was given salol internally. Soon after the occurrence of the chill the uterus was curetted with a douche curette, but no evidence

of a septic process in the uterus or vagina was obtained. The uterus was not tender but was slightly enlarged, the abdomen was not swollen, and there was no evidence of pelvic inflammation. The urinary tract, however, seemed the seat of bacterial invasion. The urine remained acid in reaction, and pus continued to be present. The percentage of urea still remained nearly normal, traces of sugar were found, and a considerable quantity of albumin.

The report on urine examination is as follows:

*Chemical.*

| Date. | Color. | Reaction. | Specific gravity. | Chlorides. | Serum albumin. | Sugar. | Urea. |
|---|---|---|---|---|---|---|---|
| May 4 | Yellow. | Acid. | 1025 | Present. | 2 gms. to litre. | None. | 1.9 per ct. |
| " 12 | " | " | 1022 | " | 2 gms. | " | 1.7 " |
| " 22 | Reddish-yellow. | Faintly. | 1018 | " | 2 " | " | 1.8 " |
| " 26 | Red. | " | Not taken | " | 5 " | " | 1.3 " |
| " 29 | " | " | 1012 | " | 5 " | Trace lactose? | 1.5 " |
| June 3 | Reddish-yellow. | " | 1010 | " | 3 " | None. | 1.7 " |
| " 5 | Reddish-yellow. | " | 1010 | " | 2 " | Trace lactose? | 1.8 " |
| " 8 | " | " | 1012 | " | 4 " | None. | 1.6 " |

*Microscopical.*

On all examinations large numbers of pus cells could be seen. Granular, hyaline, and a few blood-casts were present in varying numbers. Epithelium from the bladder, with a few cells from the kidney, could always be seen.

The patient died of exhaustion on the twenty-seventh day after the birth of her child. At no time could an enlarged kidney be felt by palpation, nor was there evidence of abscess in the pelvis, abdomen, or kidney. Post-mortem examination showed that the uterus, tubes, and ovaries were normal. Both kidneys were much enlarged; capsules adherent; the ureters and bladder were thickened, and gave evidence of a chronic inflammation. Microscopic examination of the kidney revealed an acute parenchymatous nephritis.

As regards the possibilities of acute infection in this case by physicians or nurses, it can only be said that the same antiseptic precautions were scrupulously observed regarding her that are observed in all cases, and that at the time of her illness there was no other case in the Maternity presenting the same or similar complications. Careful study of the patient and the circumstances of her illness have led us to believe that germs, originating in a previous gonorrhœa and finding lodgment in the urethra or bladder, after labor invaded the ureters and kidneys, causing the nephritis which produced death. The patient's symptoms were distinctly those of intoxication with ptomaïnes. She yielded not at all to treatment, but grew progressively weaker, never rallying from the poison which ended her life.

The following cases of toxæmia, with threatened eclampsia, were terminated by treatment appropriate for the condition, and by the prompt induction of labor.

A. P., aged thirty-three, white, was pregnant eight months. She had borne several children, and on a former occasion said that she had suffered from "kidney trouble." She was pale and anæmic in appearance, and complained of headache, disordered vision, and swelling of the feet and ankles. Examination of her urine showed a very considerable amount of albumin, diminution in the excretion of urea, while the urine contained a large number of red blood-disks, with epithelium from the tubules of the kidney, and granular casts. After free purgation and a hot bath, labor was induced, resulting in the speedy delivery of a living child. The patient's symptoms were soon relieved, and she made a slow but satisfactory convalescence. In her case the exact condition was determined more by the use of the microscope than by any one agency, although thorough study of all the points in the case was necessary to comprehend its scope.

A second case of toxæmia treated by the induction of labor occurred in a woman the victim of chronic alcoholism, who entered the Maternity in a partially intoxicated condition, and was thought by the police to be in labor. It was observed in her case that excretion was deficient, that the percentage of urea was less than normal, and that she manifested the nervous phenomena to which attention has been drawn in the foregoing cases. Labor was accordingly induced; it was complicated by a false position of the head, which lodged with the parietal bone against the brim of the pelvis. It was necessary to give the patient chloroform, and to perform podalic version. She and her child made a good recovery.

The fact that the toxæmia of pregnancy results in a condition of marked anæmia after the puerperal period is illustrated by the case of a patient who suffered from persistently defective excretion during her pregnancy and after labor. Her child perished from pulmonary catarrh, and she herself was transferred to the medical wards of a hospital, where her condition of anæmia and kidney failure could receive more extended treatment.

It is quite possible for a condition of marked toxæmia to be present in which the examination of the urine fails to reveal either casts, albumin or marked deficiency in urea.

A primigravida, the wife of a physician, and a woman of more than ordinary intelligence regarding physiology and medicine, gave her husband great anxiety by reason of attacks of epigastric pain which might be described as gastric crises. This pain occurred at irregular intervals, was often worse at night, preventing sleep, and was unattended by nausea or vomiting. The patient's bowels moved daily, her legs were not swollen, the amount of urine secreted daily had gradually diminished, but so gradually that the patient's attention was not drawn to it until she was requested to give information regarding this point. The results of two examinations of the urine are as follows:

*October* 11, 1893. Color, yellowish red; sp. gr., 1026; reaction, acid; chlorides, normal; albumin, a trace; sugar, none; urea, 1.4 per cent.

*Microscope.* A considerable shedding of epithelium from bladder, though a few cells from the ureters can be seen. Cells are pale, and many are somewhat degenerated as to form. Uric acid, in various forms, abundant. A form somewhat resembling an old granular cast much broken down. A few crystals of oxalates.

17*th.* Color, yellow; specific gravity, 1014; reaction, acid; chlorides, normal; sugar, none; albumin, none; urea, 1.1 per cent.

*Microscope.* A large number of crystals of ammonia urate and uric acid in various forms. No casts of any kind, and very few epithelial cells.

Pronounced nervous symptoms were present, consisting of coronal and frontal headache, extreme restlessness, and melancholia greatly exceeding the usual timidity manifested by patients in her condition. The skin was slightly dry, the tongue clean, the appetite poor, while meat was a favorite article of diet. Her epigastric pain and nervous symptoms became so pronounced that her husband requested me to see the patient. A careful examination revealed the facts already narrated, and led to a diagnosis of toxæmia. The examination of the urine revealed no marked abnormality, except deficiency in quantity. The patient was at once given two and a half grains of calomel, with ten grains of soda at night, and the next morning the compound colocynth pill of the Pharmacopœia. Her diet was restricted as closely as possible to milk, and she was given a warm or hot bath every evening before retiring. Woollen underclothing was worn. In less than forty-eight hours from the time when the patient was first seen a marked improvement had occurred. The amount of urine had increased, the bowels had moved freely, the epigastric pain was less, the patient's mental and nervous condition was much better, and her appetite was not satisfied with the milk diet enjoined. She was urged to be as much as possible in the open air, and her diet was enlarged to include fish, oysters, milk, bread, and fruit. The warm bath was continued at evening, and a colocynth pill and an occasional dose of calomel were employed, as her husband found necessary. A week from the day of my first examination her symptoms had entirely disappeared. This patient's mother perished from eclampsia at her birth. That this case could easily have gone on to eclampsia we believe from the very unstable condition in which we found her nervous system and her diminished excretion. She was shortly afterward delivered of a fine male child after a normal labor.

The treatment of the toxæmia of pregnancy must be instituted with reference to promoting the action of five excretory organs—namely, the kidney, liver, intestine, skin, and lungs. The usual precaution of limiting the patient's diet largely to milk is of course indicated, but when nutrition suffers from the monotony and distastefulness of milk, there should be no hesitation in giving a more liberal diet to preserve the patient's strength. Fish and oysters, the white meat of fowls, fruits in abundance, and the more digestible sorts of bread, fresh and nutritious, form a usually acceptable diet. Pure water must be taken, but not in excess, as it is possible to seriously embarrass the kidneys by a sudden increase in the amount of fluid taken. Tea had better be omitted, while the diuretic effect of coffee is sometimes of value.

The literature of the subject affords abundant evidence that the liver has an important part in the production of this condition. However theory may dictate regarding treatment, I have no doubt of the practical advantages following the occasional use of calomel and soda to promote the action of the liver and kidneys as well. This should be followed by a purgative producing free and liquid stools. Salts of potassium should be avoided because of the irritant properties possessed by potassium when introduced into the fluids of the body. Colocynth is a convenient and efficient drug for this purpose. The bath and pack are the only efficient remedies which experience suggests in promoting the excretory action of the skin. Where the hot bath is depressing, the warm bath, accompanied by the ingestion of a small quantity of hot water, is of decided value. This may well be taken just before retiring, thus avoiding the danger of exposure to cold following the bath. Light woollen should be worn next the skin in summer or winter. In addition to the bath, in severe cases the pack in sheets wrung out of hot water, or the hot-air bath, is of the utmost value. Further, where a condition of moderate toxæmia exists, or continues a long time, yielding to treatment with difficulty, great benefit will be found from gentle massage; this should include the limbs and back, avoiding the abdomen. It may well be given at night, followed by the bath, and often secures for the patient a refreshing sleep.

The importance of fresh air in abundance for these cases is sometimes overlooked; in summer, conditions for obtaining good air are very commonly present; but in winter it is necessary to attend to this point.

Especial attention is called to the diagnosis of toxæmia from the general condition of the patient's nervous system; a careful and experienced observer can detect a very different condition in the toxæmic patient from the simple nervousness and apprehension of the pregnant woman; the condition is that of intoxication varying in degree; thus we recall the case of a woman admitted to a hospital and soon after taken with severe eclampsia; after a dangerous illness of several days she recovered, having been utterly oblivious of her coming to the hospital, and of her illness, until she was virtually convalescent. She had been as completely intoxicated as if drugged with alcohol or opium. An interesting manifestation of this condition is afforded by the peculiar mania often seen in eclamptic cases; thus in the case of S. H., already described, for several days before death her delirium was a very pitiable form of mania.

The clinical picture afforded by the toxæmic condition must impress itself upon the careful observer as one of an intoxication showing itself by a disordered nervous system. We regard as cardinal symptoms of this condition the nervous phenomena already described, and diminished excretion. Upon these a diagnosis is to be made and the treatment of

the case conducted. As regards the cardinal principles of treatment, we are opposed to the use of sedatives and narcotics; the patient's need is for elimination, and that must be secured as promptly as possible. The sedative effect of eliminative treatment is often remarkable; thus in the case of the physician's wife already described, she asserted that the most enjoyable features, physically, of her life during the last weeks of her pregnancy were the warm bath taken at evening and the few hours of refreshing sleep which followed. She also recognized the distinct benefit obtained by free purgation.

In the face of threatened eclampsia, our duty lies in prompt emptying of the uterus. Here an anæsthetic is often requisite at the time of labor, and my preference is for chloroform. The danger of delay in emptying the uterus is too familiar to require mention, and when the patient's symptoms are not relieved by thorough elimination from the intestines, skin, kidneys, liver, and lungs, the time for delay is certainly past, and we shall not be faithful to our duty if we allow a patient to go further in this dangerous condition. The recent literature of eclampsia contains striking evidence of the value of terminating the pregnancy by dilating the uterus and removing the fœtus. If this be done under anæsthesia and with antiseptic precautions, the results are sufficiently good to command a careful attention for this method of treatment. In my experience, it is a mistake to employ drugs which tend to depress the patient and favor the occurrence of œdema; such is pilocarpine. When stimulation is needed, I have seen benefit from alcohol, digitalis, and in cases of eclampsia when labor had terminated and exhaustion threatened, in the hypodermatic use of strychnia.

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## A CONTRIBUTION TO OUR KNOWLEDGE OF EPIDEMIC CEREBRO-SPINAL MENINGITIS.[1]

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### EPIDEMIOLOGY, ETIOLOGY, AND PATHOLOGY.

THE epidemic of cerebro-spinal meningitis to be reported here was one of the most extensive which has prevailed either in this country or abroad for many years. The outbreak, which began in January, had by the first of February become so alarming as to lead the State Board

[1] A report on the epidemic disease which prevailed during the winter and spring of 1893 at Lonaconing, Maryland, and at other places in the George's Creek valley.

of Health to decide on making an official investigation for the purpose of determining the cause, and, if possible, of adopting some means to prevent the further spread of the disease.

The fact that one of us (Dr. Flexner) was officially delegated to make this investigation made it easy for us to gain access to a large number of cases, and we wish to acknowledge gratefully the many kindnesses, direct and indirect, received at the hands of Dr. C. W. Chancellor, Secretary of the State Board; Drs. J. D. and W. Q. Skilling, Drs. M. G. and A. S. Porter, Dr. J. O. Bullock, of Lonaconing, and Dr. A. W. Smith, of Ocean. Without the co-operation of these gentlemen these researches would have been impossible; as it was, every opportunity was given us for a full and complete study of all individuals affected during our visit to the diseased region.

The town of Lonaconing is a mining centre in the Alleghany mountains and contains some 5000 inhabitants. The location is peculiar and is more or less of interest from an epidemiological standpoint. The town is situated in a narrow valley and extends well up the sides of the steep hills which enclose it. Through the bottom of the gulch runs a muddy stream known as George's Creek. The mountains rise more or less abruptly from the edges of the creek, and the town may, for our purpose, be divided into two parts: first, that lying in the valley in which are situated the business portion and for the most part the dwellings of the professional and business men of the place, and second, that built on the mountain sides, consisting almost entirely of miners' dwellings. The stream and valley are somewhat tortuous at this spot, and give the place the appearance of being surrounded on all sides by mountains.

One is struck almost at once by the arrangement of the houses on the incline. They are placed in long rows, tier above tier, facing the valley; behind, and therefore above the houses, are situated the privies, placed flat upon the ground; and not infrequently the cow-stable is located quite close to the dwelling. Before our arrival at Lonaconing there had been a heavy snowfall, but the weather soon afterward became mild, the snow melted, and exposed to view and made doubly striking by contrast the dreadful conditions which existed. The water streamed down the mountain sides, carrying with it the general refuse from the yards, the material from the cow-stables, and the excreta from the outhouses of the upper tiers, through the yards, past the dwellings situated below, and finally entered the creek, which acts as a huge sewer winding through the centre of the town. On their way these polluted surface-washings found no system of drains for their reception, and in places crossed the common roadway in little rivulets, through which the inhabitants of the town had to drive and walk.

The water supply of Lonaconing is derived partly from surface wells and partly from cisterns, and we actually observed during a thaw the entrance of surface water and the accompanying filth directly into wells which were in daily use for drinking and culinary purposes. Significant, too, is the fact that in the valley the wells are situated often only a few feet from the creek, and it is certainly not hard to believe that the contaminated water from the creek could penetrate through the soil and become mixed with the water of the wells. The slaughter-houses are in the heart of the town upon the banks of the creek, and the blood and waste material from these find their way into its waters.

These unsanitary conditions are not confined to Lonaconing alone, but in its course George's Creek passes through a number of small towns, each of which adds its quota to the general filth, and only a short time ago an investigating party inspecting the river between Westernport and the Phœnix mines found among other things carcasses of horses in the stream or lying along the banks.

The population of Lonaconing is chiefly made up of coal-miners and their families. In many instances there was distinct evidence of overcrowding, as many as eight and ten individuals living, eating and sleeping in a house of four small rooms. In one house in which a fatal case occurred eleven persons slept in three bed-rooms. The individual houses in the long rows on the hillside are built so close to one another that often there is scarcely room for a footpath between them. There were, however, among them many well-built and commodious houses, though, as we shall show later, the occupants of these were by no means immune from the disease.

From what we have said it will be obvious that, whether or not cerebro-spinal meningitis is a filth disease, Lonaconing and the other towns situated along the banks of George's Creek are, and have been for years, in about as unsanitary a condition as could be well imagined, and it would be little wonder if typhoid fever, diphtheria, dysentery, and the whole group of filth diseases should find in them an endemic home. And during the past spring, besides meningitis, the medical men of Lonaconing have had under their care many cases of scarlet fever, measles, parotitis (an epidemic of over 100 cases), influenza, pneumonia, diphtheria, and acute articular rheumatism.

By far the greater number of the cases of meningitis occurred in the higher portions of the town, and they were usually found confined to little foci or groups of houses, points which have been noted by different observers also in other epidemics. To this rule, however, there were numerous exceptions. A few of the patients lived close upon the margin of the creek, and isolated cases were by no means rare. One boy, who died on the ninth day of the disease, lived on Jackson Hill, fully a

quarter of a mile from any other habitation, and of the patients at Ocean none lived more than thirty feet above the level of the stream.

The earliest cases of which we have notes occurred during the first week in January, 1893. During the course of a dance two young men who had overheated themselves imprudently rushed into the open air to get cool. The weather outside was extremely cold, and it is said that their hair, wet with perspiration, was frozen upon their heads. The drive to their homes afterward was long and very cold, and these two men, aged twenty and twenty-two respectively, developed symptoms of cerebro spinal meningitis next day. Immediately afterward the disease became epidemic, appearing in many different places in Ocean, Midland and Lonaconing about the same time. After every marked fall of temperature there were fresh cases to record, and the disease prevailed there in varying intensity up to the middle of May. Up to March 1st there had been sixty-eight well-marked cases, besides some forty which were classed as abortive cases, making a total of over one hundred cases. Since our return there have been many more cases in Lonaconing, as well as an alarming outbreak in Frostburg, making the total number of cases about 200.

Of the sixty-eight patients in whom the symptoms were clearly defined thirty-seven were males and thirty-one females. In other epidemics the number of females attacked had, as a rule, slightly exceeded that of the males, and it would seem probable, therefore, that sex bears little or no relation to the etiology of the disease. Undoubtedly, children and young adults were most susceptible, although the occurrence of the disease among older people cannot be denied, one of our cases being a man of thirty-eight years, another a woman of forty. The youngest patient observed was a child of five months.

The study of different epidemics of cerebro-spinal meningitis has not as yet led to the detection of a common factor or set of conditions in the localities attacked. The disease shows no special predilection, so far as one can judge, for particular regions, or for any season of the year, and no one class of people is affected, the apparently robust and the weak suffering alike. It has, indeed, been established that, *cæteris paribus*, young individuals are more susceptible than adults, and although there is no sharp line to be drawn in the occurrence of the disease under different circumstances, yet its greater frequency under unfavorable hygienic surroundings, such for example as in barracks and in country districts, is to be borne in mind. Epidemics have occurred in the same district, affecting areas slightly removed from one another. Such an epidemic, studied by Low, appeared in 1890 in certain of the eastern counties of England. The parishes affected all lay within short distances of one another in agricultural communities, in all of which it was the custom to use the house-refuse for fertilizing purposes. The drinking-water was obtained

from wells and from open pits, though the water from the latter is said to have been boiled before being used. In other epidemics, after a considerable period of quiescence, the disease has reappeared in the same locality, examples of which are given by Wolff, who studied the Hamburg epidemic.

Osler states that epidemics have occurred more frequently in winter and spring, and that villages and country places have in certain of these suffered relatively more than cities. The Leipzig epidemic which Strümpell studied appeared there in 1879, continued into 1880 and 1881, beginning in the winter and becoming more severe in April and June, almost ceasing in February and March of 1881, only to appear again in a sporadic form later. Claverie described an epidemic at Rochefort which prevailed during the winter of 1885–86 in which there were marked oscillations of temperature, although at no time did the thermometer fall below zero. Lemoine observed in the epidemic at Orleans during the winter of 1886 that a sudden lowering of the temperature was followed in one or two days by a marked increase in the number of cases.

The epidemic at Lonaconing appeared in the winter and reached its maximum during the coldest weather. The winter was, moreover, one remarkable for its severity, and there were heavy falls of snow, with very cold weather alternating with thaws of short duration. During the month of February, however, when the cases were perhaps most numerous, the weather, as shown by the observations reported from Cumberland, Md., to the U. S. Weather Bureau, was exceptional only for the rainfall, for while the average rainfall for the month of February during the past twenty-two years has been 2.51 inches, this year the rain and melted snow amounted to 3.58 inches, the snowfall itself measuring twenty inches. During the month there were eight clear days, two cloudy, ten fair, and eight of rain and snow. The highest temperature during February, 1893, was 58° F., the lowest 3° F.; mean 33° F. The averages for the last twenty-two years are: Highest temperatures 58°, lowest 2°; mean temperatures, 33°. It may be mentioned that this epidemic agrees with that described by Low in that the disease occurred in several of the neighboring places in the same valley.

The epidemic and sporadic cases of cerebro-spinal meningitis which have occurred since 1886 are of especial interest inasmuch as they have been studied bacteriologically. This method of study has been rewarded by the isolation of a particular micro-organism from the exudate in the meninges, namely, the micrococcus lanceolatus, which there is now reason to believe bears an etiological relation to the disease.

Weichselbaum found this organism in the exudate in the meninges in 1886, and Netter obtained it from cases in the epidemic studied by Lemoine in the same year. Goldschmidt isolated it from a case in 1887,

Ortmann in 1888, and Foà and Bordoni-Uffreduzzi in cases in an epidemic occurring in Turin in 1888. Banti found it in 1889, and Bonome obtained it at autopsies during a small epidemic in Padua, which occurred in 1890. Mirto obtained the micrococcus lanceolatus in 1891 from the exudate in a case of epidemic cerebro-spinal meningitis—a man twenty-two years of age. The cocci were in every way typical, and when inoculated into rabbits gave rise to fatal septicæmia. Klippel found it in sporadic cases in 1891 and Ribbert in 1892. Ribbert's cases were those of two brothers who were affected almost simultaneously, one of them dying in forty-three, the other in forty-seven hours.

The first to isolate the micrococcus lanceolatus from the exudate in meningitis was Eberth, in 1880. The meningitis in this case was secondary to pneumonia. Since this time many others have studied this form of meningitis and have obtained the same organism. Thus Bozzolo and Leyden in 1883, Weichselbaum and Fraenkel in 1886, and Meyer and Netter in 1887; Hansen and Bonome in 1888, Monti in 1889, and Gabbi and Puritz in 1890. In Professor Welch's laboratory in Baltimore, in three cases recently the same organism was isolated.

There is another class of cases in which a meningitis develops in the course of diseases other than pneumonia, or follows upon injuries. In some of these the micrococcus lanceolatus has been found, in others different bacteria. For example, Netter found in 1889 the Friedländer bacillus in a case of meningitis following otitis media. Mills claims to have isolated the Friedländer bacillus also from a case of pneumonia associated with meningitis, but it is not improbable that his organism was the Fraenkel-Weichselbaum diplococcus. Monti, in the same year, found the micrococcus lanceolatus in a case of combined arthritis and pleuritis. Kainen, in 1890, separated a bacillus which he regarded as identical with the typhoid bacillus; and in the previous year Adenot had likewise isolated an organism which he thought to be the typhoid bacillus. Debove about this time described a case of combined peritonitis and meningitis due to the pneumococcus. Hanot and Luzet, in 1890, isolated streptococci from the exudate in the meninges in a puerperal woman who had died of meningitis and general infection. Le Gendre and Beaussenat, in 1892, obtained from a case of meningitis associated with otitis media, arthritis, and broncho-pneumonia, the staphylococcus pyogenes aureus. Klippel, in 1892, found, in a demented individual who died of acute meningitis, the micrococcus lanceolatus. There was an old area of softening present, and over this the exudate was most marked. Boulay and Courtois-Suffit, in 1890, isolated the micrococcus lanceolatus from a case of combined peritonitis and meningitis without pneumonia, and Bonome has observed a case of combined pleuritis, pericarditis and meningitis due to the pneumococcus. Zorkendorfer, writing from Chiari's laboratory, reports a very interesting case observed

during this year in which at autopsy, besides a purulent meningitis, there was a well-marked inflammation in the ethmoid cavity and suppuration in the sphenoidal sinuses. Besides, the mucous membrane of the pharynx was reddened and covered with a thin layer of pus. From the pus in the meninges, as well as that in the sphenoidal sinuses, he found diplococci in cover-slips. He succeeded in isolating them also in pure culture, and found, by injection into the peritoneal cavity of rabbits, that they set up a fatal septicæmia, the organisms in the blood at autopsy corresponding in every respect to the micrococcus lanceolatus. In three cases of purulent meningitis examined by Neumann and Schaeffer, once the pneumococcus, once the staphylococcus pyogenes aureus, and in the remaining instance a fine bacillus was found. In a fourth case the results of the examination were negative. Netter has also in one case found the staphylococcus pyogenes aureus. Roux states that he isolated from a case the staphylococcus aureus and albus and a bacillus resembling that of typhoid fever. Mircoli claims to have obtained from one case a staphylococcus resembling the aureus and a bacillus which he identified as the bacillus pyogenes fœtidus, the latter being obtained in cultures from the motor cortex and medulla.

Früs describes an epidemic at Copenhagen in which 185 persons (111 under fifteen years of age) were affected. From the pus of nine cases examined by Roosing a thick, short bacillus was obtained which is described as approaching a coccus in form, and is stated to grow characteristically on gelatin. We recently made an autopsy on a young man who died of meningitis, following an injury to the head. There was contusion of the scalp but no loss of continuity in the bones of the skull. In the exudate of the meninges the micrococcus lanceolatus was found; no other focus of suppuration was present in the body. Prudden, in a case of traumatic meningitis occurring in a child of thirteen months (a patient of Holt's) has isolated the micrococcus lanceolatus from the exudate. White mice inoculated with the organism died in thirty-six hours from septicæmia.

The number of bacteriological examinations of uncomplicated cases of meningitis, occurring either sporadically or in epidemic form, is up to the present time not large. There is, however, such uniformity in the results obtained that while it is perhaps not to be considered as established for all, yet the majority of cases appear to be caused by an organism which, in its morphological characters and biological properties, is not to be distinguished from the micrococcus lanceolatus.

During our stay at Lonaconing two deaths occurred, and we were permitted to make autopsies. The first was a child of nine years, who died on the third day of the disease. The autopsy showed an extensive convexity-meningitis with spinal meningitis. The second autopsy was on a girl of sixteen who died in the third week of the disease. In this case

there was an extensive exudate over the base with effusion into the posterior fossa.

PATHOLOGICAL ANATOMY.—The changes in the central nervous system in cerebro-spinal meningitis have been studied, among others, by Strümpell, v. Campe, and Hagelstam. They are not always of the same kind or extent, and depend in part, at least, upon the duration of the disease. In the explosive cases the evidence of more than hyperæmia and serous exudation can often not be appreciated by the naked eye; but the microscopical examination of such cases shows that a tolerably rich emigration of leucocytes into the pia-arachnoid has already taken place. In the cases in which death has been longer delayed the inflammatory alterations are often pronounced, and they are not necessarily limited to the lepto-meninges. The substance of the brain and cord, as shown by Strümpell, are commonly involved, and the legitimacy of the terms meningo-encephalitis and meningo-myelitis has been suggested by him. While the inflammatory processes in the substance of the brain and cord are generally to be made out only with the microscope, yet in some instances, as pointed out by Zenker and Klebs, and more recently by Strümpell, abscesses of comparatively large size may exist.

In the substance of the central nervous system the invasion may take place in three ways: (1) by direct extension from the meninges; (2) along the vessels entering from them; and (3) through the development of independent foci. These several modes were observed by Strümpell, whose observations were confirmed in our cases. Hemorrhages, especially into the substance of the cord and into the central canal, have also been observed.

The exudate in the meninges consists of pus cells, red blood-corpuscles, fibrin, and serum in varying proportions. The amount of serum may be considerable, as in the case reported by Stillé, in which three pints were present, death having taken place on the thirty-fifth day of the disease. The exudate fills the meshes of the pia-arachnoid, dips down between the convolutions, enters the ventricles of the brain and the central canal of the cord, and appears in the form of a cellular infiltration in the substance of the brain and cord. Finally, the extension of the process along their course gives rise to the symptoms referable to the involvement of the nerves.

The alterations found in other organs of the body cannot be said to be peculiar to this disease, but are such as attend infectious diseases in general. Among these may be classed the hemorrhages into the serous membranes and into the substance of certain organs; the swelling, increased granulation, and even fatty degeneration of the cells of parenchymatous organs, and the hyperæmia and degeneration of the voluntary muscles.

In our two autopsies the acute and subacute, as well as the convexity and basal forms of the disease, were represented. The first was the girl of nine, dying on the third day of the disease. Autopsy two hours after death. There were no adhesions between the dura and the skull-cap; the outer surface of the dura was smooth, the longitudinal sinus containing dark fluid blood; the dura and pia-arachnoid were not adherent; the vessels of the pia were greatly dilated and filled with blood of a dark color. The soft meninges were swollen, but no considerable quantity of fluid escaped from them; they were opaque, especially over the convexity of the brain, and in the depressions between the sulci heavy opaque white streaks and bands were visible. This exudation into the meninges was confined to the convex surface of the brain, the base being free from it, but the ventricles were somewhat dilated, and contained an excessive amount of clear serum.

The dura covering the spinal cord, especially in its inferior part, was wide and bulging. On incising it near the middle of the lumbar region about 40 c.c. of slightly turbid fluid escaped. The spinal dura was not adherent to the pia. In the meshes of the latter was an exudate which was not uniformly distributed, but was most abundant posteriorly and corresponded for the most part with the lower cervical and dorso-lumbar regions. This exudate was white and opaque and resembled that present in the brain. The vessels of the pia of the cord were likewise injected, their contents being dark in color. On section of the cord the substance presented a vivid pinkish tint.

There were subserous hemorrhages into the pleura and pericardium, and beneath the capsule of the kidney there were punctiform hemorrhages. The cut surface of the kidneys and liver presented an opaque appearance. There was no pneumonia and the nasal sinuses were free from perceptible inflammation. The spleen was only slightly enlarged, the color was darker than normal, its substance somewhat softened, and the Malpighian bodies were swollen and strikingly distinct. The mucous membrane, especially of the small intestine, was congested, and the follicles were swollen.

The voluntary muscles were intensely red, and this was especially noticeable in those along the spine, and a large amount of blood escaped from them on incision.

The bacteriological examination of the pus in cover-slips from the exudate in the meninges of the brain and cord showed the presence there of the micrococcus lanceolatus without admixture with any other organism. The micrococci occupied pus cells and were also present in the fluid among the cells. They were fairly numerous.

Cultures were made in plain agar-agar, in glycerin-agar, and in Guarnieri's medium (Prof. Welch's modification). Owing to circumstances they could not be brought into a thermostat for forty-eight hours. Tissues were placed immediately after the autopsy in various hardening agents, Flemming's solution, bichloride of mercury, and absolute alcohol. Inoculation of animals with the exudate could not be practised at Lonaconing. The tissues were sent to the laboratory in Baltimore by express, where inoculations of mice and rabbits were made.

We had been at Lonaconing several days before a death occurred. Before our visit there had been deaths almost every day, but the mortality diminished for a while, and during those days no new cases

developed. The death of the child of nine years took place at seven o'clock on the last evening we spent at Lonaconing, and the autopsy was made at nine. Cultures from the exudate were made at once on exposing it by drawing back the dura. Additional cultures were made an hour or more later. The first cultures were made at the moment the exudate was exposed, without disinfecting the surface, by inserting the needle under the raised dura; the second set, which included cultures from all the organs, was made in the usual manner after burning the surface of the organs. It is necessary to state that the second set of cultures was made in a carriage-house next a stable in which horses were kept.

On the afternoon of the day following the autopsy we left for Baltimore carrying with us fresh tissues for inoculating animals, the culture tubes, and the preserved tissues. We had proceeded as far as Cumberland, Md., when we received a telegram asking us to return to Lonaconing, as another death had occurred. The organs of the first case were, therefore, despatched by express to Baltimore, so that no unnecessary delay should occur before the inoculation of animals could be made. They reached Baltimore about noon on the following day, some forty hours after the autopsy. The animals inoculated (mice and rabbits) all recovered. The cultures were not sent at this time, but as a precaution were kept and carried by us to Baltimore, and placed in the thermostat just fifty hours after the autopsy.

The first cultures made *at the time of the autopsy* showed a very feeble growth of diplococci, but on transplantation no further growth could be obtained. All other tubes from the brain or cord showed either no growth or an abundant one of a tolerably coarse bacillus. This bacillus is probably to be regarded as a contamination, which is believed to have gotten into the tubes at the time of the inoculation. This would not be surprising considering the disadvantageous circumstances—above noted—under which the cultures had to be made. Culture-tubes from the organs remained sterile with the exception of those from the spleen. From this a growth was obtained of pure streptococci, which formed tolerably long chains, and were devoid of pathogenic effects when introduced in large quantities into mice and rabbits.

The cultures from the second case could not be made until Baltimore was reached. The autopsy was made at 10 A.M. (twelve hours after death), and the cultures at midnight of the same day. The tubes inoculated from brain, cord, and viscera remained sterile. Plain agar, glycerin-agar, and Guarnieri were the media used. Mice and rabbits were inoculated from the exudate in the brain and cord. None succumbed.[1]

[1] In view of these experiments, it may be questioned whether the organism found by us in the exudates was really the micrococcus lanceolatus. It is, however characteristic of the

The histological examination of the tissues from the first case showed that an abundant exudation had taken place into the membranes of the brain and cord. It will be well, perhaps, to go more in detail into the microscopical characters of this exudate and of the lesions of the cord and brain. While the tissues were still warm they were placed, as has before been mentioned, in various hardening agents, including Flemming's solution, bichloride of mercury, and absolute alcohol.

For the study of the cellular elements in the exudate, the tissues fixed in bichloride of mercury and afterward hardened in alcohol, and those placed directly into absolute alcohol, gave the best results. The cord fixed with bichloride of mercury also showed well the alterations in the axis cylinders of the nerve roots, to be presently described. Sections from various levels were studied, and variations were noted; but they were hardly great enough to merit separate description. On the other hand, the pictures presented by the tissues prepared with $HgCl_2$, as contrasted with those hardened in alcohol, merit separate consideration, and we are the more disposed to treat them separately on account of the general significance which may attach to the variations of cell appearance depending upon hardening and staining reagents.

The cord treated with $HgCl_2$ is well preserved, the morphological elements staining sharply. The *anterior half:* The membranes are swollen, the swelling being due to (1) the dilatation of the bloodvessels, and (2) an exudate in the meninges composed of serum and cells. The evidence of fluid is not to be made out everywhere with certainty, but areas occur in which the tissues are found pressed widely apart. The pia extending into the anterior fissure is swollen, and the bloodvessels are distended and filled with blood. This dilatation of the vessels is best seen at the anterior margin, where the fissure is widest, and again just before its termination at the white commissure, but it occurs elsewhere in the cord. The swelling of the tissues in the fissure is not due altogether to the increased accummulation of blood in the vessels and the transudation of fluid, but is in part dependent upon an increased number of cells in the tissue. These cells vary in size and possess nuclei which are of different sizes and forms. The majority of these cells have not the appearance of leucocytes with polyform nuclei—in fact but few cells having the form characteristic of these are to be seen. Moreover, in the dilated bloodvessels few polynuclear leucocytes are present. The cells which make up the increase in the tissue are chiefly small cells with round, deeply-staining nuclei and a small amount of protoplasm; the others are all of an epithelioid type. The latter are in small numbers only, and perhaps not to be regarded as essentially increased. Single red blood-corpuscles are free in the tissues and a small quantity of blood pigment is to be found deposited there. Finally, in the meshes of the membrane there are small globular masses

lanceolate diplococci to show a variable vitality and great variation in their pathogenic effects on animals, and from these well-established facts we are the more disposed to regard the bacteria we found as being identical with the lanceolate cocci which give rise to acute lobar pneumonia.

varying in size from one-third to one-half the diameter of a red blood-corpuscle. In eosin these stain pale pink, while the red blood-corpuscles take on a bright yellowish-red color. The globular masses are less refractive than the red blood corpuscles, which stain well; but they approach more nearly in staining and refraction shadows of red blood-corpuscles, some of which are also occasionally seen. It is not unlikely that they represent partly disintegrated red corpuscles, if indeed they are not globular masses of hæmoglobin. In the depth of the fissure the extravasation of blood is more decidedly marked than is the case near the surface.

Passing from the anterior fissure toward the anterior roots, at first a slight diminution of the cellular infiltration is noted, but at the roots the exudate is more abundant. In the angles between the roots and the cord dense accumulations of cells may be found. The forms which predominate here in the exudate are again the small round cells, although a larger proportion of cells with vesicular nuclei, some leucocytes with polymorphous nuclei, and a few red blood-corpuscles are present. This mass of cells is on the surface, and it can be seen that a proliferation of the cells of the lymph spaces has taken place in the pia beneath; in these spaces an occasional "polynuclear" leucocyte is seen. There is an almost uniform layer of cells between the anterior lateral and the posterior lateral fissures. At the posterior roots the increase in the exudate is marked. The cells fill the tissues of the membranes, and about the veins of the pia there are occasional accumulations of round cells. The polynuclear leucocytes are relatively slightly increased in number in this portion of the cord, and are correspondingly more numerous in the bloodvessels. The predominating cells, however, resemble lymphocytes or the mononuclear cells of granulation-tissue. Toward the posterior median fissure the exudate becomes still thicker, the membranes are obscured, and more red blood corpuscles are mixed with the exudate. In this situation there are cells equal in size to four or six of the round cells; they are thin and transparent, are round or polygonal in shape, have a feebly staining protoplasm and vesicular nuclei, and often contain other cells, especially leucocytes with polymorphous nuclei, within them.

The bloodvessels of the cord itself are dilated. This is the case both in the gray and in the white matter. Just beneath the pia hemorrhages have occurred, some of which extend into the substance of the cord, and in the anterior lateral columns small hemorrhages have taken place independently of those under the pia. There is no perceptible tendency of the process of the membranes in this instance to pass into the cord. Separate foci of leucocytic accumulation do, however, occur; but they are neither large nor numerous, nor, as far as could be determined did they have any connection with bloodvessels. The largest collection observed was in size a little smaller than a miliary tubercle (Fig. 1).

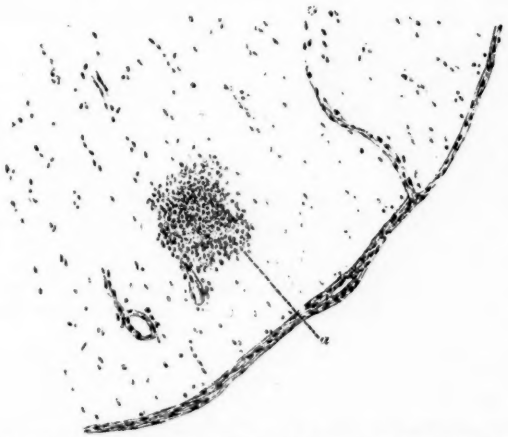
The ganglionic cells show certain differences among themselves, consisting of variations in the granulation of the protoplasm, the clearness of the nuclei and nucleoli (these being in some cells quite indistinct), but especially in the sharpness of the cell margins. In some, particularly in those in which the nuclei are indistinct, the margins of the cells are very indefinite. These are the only changes observed in

the large multipolar cells of the anterior horns. In the posterior horns an occasional cell may be seen in which the refraction of the protoplasm is increased, and these cells are swollen and the lymph spaces surrounding them obliterated.

The changes described by Strümpell and Hagelstam in the axis-cylinders of the cord were not observed by us in these specimens, probably for the reason that, although all other parts of the cord were well preserved and stained perfectly, the axis-cylinders did not stain satisfactorily. However, in the nerve roots these as well as interstitial changes were observed, and in some instances were quite marked.

Swelling of the axis-cylinders in the cord has been noticed in nephritis, tuberculous meningitis, and leukæmia by F. Schultze, by Kohler

FIG. 1.



Section of spinal cord showing collection of leucocytes in its entrance at *a*.

in the oculo-motorius in tuberculous meningitis, and Hoche found it both in the cord and nerve roots in tuberculous meningitis, and describes in addition a cellular proliferation of the peri- and endoneurium of the latter. The swelling of the axis-cylinders also occurs in variola, typhoid fever and septicæmia. (Hoche.)

The anterior roots show fewer alterations than the posterior. The bloodvessels in the perineurium are swollen and a few red blood-corpuscles are found free between the nerve bundles. There is no marked proliferation in the interstitial tissue. The majority of the nerve fibres are unaltered, but still not a few are swollen and stain in hæmatoxylin feebly, those which are unchanged staining more deeply. These swollen fibres have on an average a diameter more than twice that of the others.

The normal axis-cylinders lie in a space which has apparently been formed either by the disappearance in part, or the contraction, of the myelin sheath, a faint line of myelin being still visible just inside

Schwann's sheath; in some instances the myelin entirely fills the space between the axis-cylinder and the sheath of Schwann. On the other hand the swollen cylinders, which occur singly or in groups, always fill the space inside the myelin sheath, being distinguished from the latter by their larger size and by their staining properties. It is worthy of note that in those nerves in which a cellular proliferation, especially around the veins, can be made out, more axis-cylinders show this change than where the cellular increase is not so apparent.

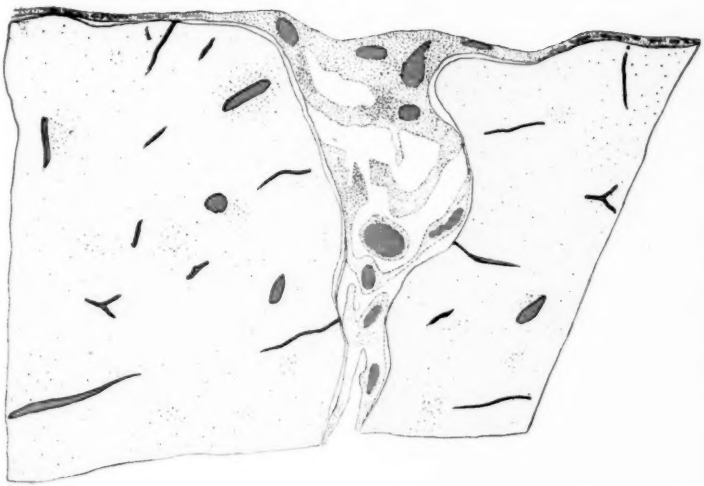
The posterior roots show the same changes as the anterior, only in a more pronounced manner. It is not uncommon in these to find as many as twenty or thirty swollen axis-cylinders lying close together. The interstitial tissues of the nerves and the epineurium are also affected. A considerable cellular collection occurs at times in these situations, and the increase in the peri- and endoneurium reaches so high a degree as to obscure the nerve fibres. This, however, seldom happens. The cells forming the collections are principally of the type of small round cells.

Specimens of the cord hardened in absolute alcohol were found well suited for the study of the cellular elements making up the exudate. Sections stained in aqueous solution of fuchsin or magenta show, as the important difference between them and those of the tissues hardened in solutions of bichloride of mercury, that more polynuclear leucocytes are present in the exudate than was before apparent. These cells are found on the anterior but in larger numbers on the posterior aspect of the cord, and in the cell masses in the latter, leucocytes presenting the most irregular nuclear forms are met with. Nuclear fragments are to be found in small quantity. Notwithstanding this difference, the cell-forms which are usually regarded as being derived from the fixed cells are still present in large numbers. In one section a small collection of polynuclear leucocytes, not associated with a bloodvessel, was found in the lateral horn. Again, in a section of one of the anterior roots a small collection of polynuclear leucocytes, and near by an evident proliferation of the nuclei of Schwann's sheath, was observed. Single polynuclear leucocytes are found between the nerve fibres, and in the bloodvessels there is an evident leucocytosis.

Specimens taken from various parts of the brain were hardened in the same way as the cord. The tissues from bichloride and absolute alcohol again gave very good preparations. Various staining reagents were employed—hæmatoxylin and eosin, fuchsin, magenta. For the study of the bacteria, the methods of Gram and Weigert were used, as well as solutions of methylene-blue and gentian-violet applied in the ordinary way.

The thickness of the exudate is not only less on the convexity than in the sulci, but it is not uniform over the convolutions themselves. In some places the exudate over the convolutions is two or three times as deep as in other places. But it is in the sulci (Fig. 2) that the greatest accumulations of cells have taken place. The characters of the exudate are not essentially different from those described in the cord, but the relative number of the different kinds of cells is not the same. There is dilatation of the bloodvessels of the pia, and an increase of leucocytes with polymorphous nuclei in these vessels is more common than in those of the cord. Hemorrhages are also found, amounting at times to considerable extravasations and at others to the escape of a few corpuscles

FIG. 2.



Section of the brain from Case I., showing dilatation of bloodvessels and the relative amount of exudation on the surface and in the sulcus.

[*To face page* 168.

only. A very little golden-yellow pigment is seen now and then. In the section the pia is lifted up from its connections with the underlying brain substance in many places, although the brain substance beneath is intact.

The cells composing the exudate consist of polynuclear leucocytes in considerable, perhaps predominating, numbers, but many other cells are also present. Among these latter are cells of the type of lymphoid cells, larger cells with vesicular nuclei, and, finally, cells much larger than either of these, which in certain situations are so numerous as to make up a considerable part of the exudate. These

FIG. 3.

From the exudate in the meninges in Case I. Polyform leucocytes, endothelioid cells, red blood-corpuscles, and the larger cells with inclusions. A few cells with fragmented nuclei, and free nuclear fragments, also present.

cells, as indicated, are not uniformly distributed. They may be found on the convexity, but are more common in the sulci. In size they equal several of the ordinary cells with vesicular nuclei, and they themselves possess nuclei of this type. They are either circular or polygonal in outline, thin and translucent, and what especially characterizes them is the fact that they often contain enclosed in their protoplasm other cells, principally polynuclear leucocytes. The number of cells which are included varies. Sometimes only two or three are seen, but as many as fifteen have been counted in one cell. Besides the leucocytes small round cells and red blood-corpuscles may be enclosed in these larger cells. (Fig. 3.) As stated, these large cells have vesicular nuclei and abundant protoplasm, and present the appearances of epithelioid cells.

While regarding them as proliferated endothelium derived from the pia, we can offer no explanation of the purpose which they serve in taking up other cells. The cells which they contain are practically normal; they possess nuclei which stain well and are of normal appearance. On the other hand, the large cells themselves are apparently normal. Sometimes it happens that the nucleus of one of the large cells is not sharply defined, or that the cell protoplasm stains in eosin a little more deeply than is usual with endothelium.

In the brain, besides inconsiderable hemorrhages, the cellular infiltration of the meninges has advanced to a slight extent into the substance along the vessels, and a few scattered leucocytes without vascular connection can be made out. In addition there is slight œdema, as indicated by the rarefied appearance of the cortex. Fibrin plays a very small part in the exudate, sections of the tissue hardened in alcohol stained by Weigert's method showing only a small amount.

Cover-slip preparations made at the time of the autopsy from the exudate in the brain and cord showed a fair number of diplococci, usually lancet-shaped and always surrounded by capsules, and, as previously stated, they were sometimes free and sometimes enclosed in cells. The results of our attempts to cultivate the organisms, as well as the inoculations of animals, have already been mentioned. In the tissues stained for bacteria by the methods of Gram and Weigert, as well as with gentian-violet and methylene-blue, typical diplococci were found. They were not particularly numerous, but were present there to the exclusion of other organisms, so far as could be determined by these staining methods.

The changes in the other organs may be summed up in a few words. In the *kidney* the bloodvessels generally are dilated, and small hemorrhages have occurred into the tubules. The tubes containing blood preserve their epithelium, but this is compressed. The epithelial cells of the convoluted tubes are swollen and granular, and here and there contain fine fat-droplets. An occasional epithelial cell devoid of a nucleus is seen. The *spleen* is congested and the lymphatic tissue of the nodules increased in amount.

The second case was that of a girl of sixteen who died in the third week of the disease. The autopsy was made twelve hours after death.

The dura was strongly adherent to the skull cap, and on removing it about 200 c.cm. of slightly turbid fluid containing white flakes escaped from the posterior fossa. The longitudinal sinus and the veins over the convex surface of the brain were distended with dark fluid blood, and the arteries were prominent. The fluid in the pia over the cortex, which was increased in amount, was turbid. On the base, covering the pons and the upper half of the medulla, was a firm white deposit which was intimately adherent to the underlying tissues. Over the base, from the pons to the optic chiasm inclusive, there was in the pia a fluid, milk-white in color, which was especially abundant in the anterior perforated space and over the optic commissure. The fourth ventricle and the lateral ventricles contained greenish-yellow gelatinous pus—indeed the former was completely filled with it. Both the lateral ventricles were dilated, and the choroid plexuses covered with an opaque exudate. A similar

opaque exudate extended along the sheath of the auditory nerve into the bony canal.

The pia-arachnoid, throughout the entire length of the cord on the posterior surface, contained a gelatinous exudate fully two millimetres in thickness, the exudate on the anterior surface being less marked.

The *kidneys* were swollen, cloudy, and cyanosed. The *liver* was cloudy and of very flabby consistence. The *spleen* was somewhat swollen, softened, and deep reddish-brown in color, the Malpighian bodies being very distinct. The mucous membrane of the *intestines* was swollen throughout, congested, and its lymphatic apparatus was hypertrophied. There was no pneumonia.

From the pus in the ventricles and from the exudate over the base of the brain, the micrococcus lanceolatus was obtained on cover-slips. The organisms were present in much smaller numbers than in the previous case. In the other organs no bacteria were found. The results of cultures and inoculation of animals from this individual have already been mentioned.

The tissues from this case were hardened in the same manner as those from the previous one, although they were not obtained in so fresh a condition. This fact is evident from the preservation, especially of the the cord. The exudate in the meninges stains well, while the substance of the cord does not stain satisfactorily. As in the previous case, the largest accumulation of cells on the anterior aspect of the cord is at the fissure, and the two points of greatest accumulation are on the surface and in the depth of the fissure. Laterally the exudate is not uniform, but is gathered into foci, and is more abundant where the anterior roots are given off. At this place the exudate passes along the roots as they leave the cord. The exudate becomes thicker still over the posterior aspect of the cord, but it is not uniform. The section has been carried through the dura, and where no mechanical separation has taken place the exudate is found to be in contact with this membrane. The thickness of the exudate over the posterior is several times that over the anterior aspect of the cord, and where the posterior roots come off the exudate surrounds them.

The cells which compose this exudate are again recognized as round cells, larger cells with vesicular nuclei (these varying in size, and often including other cells in their substance), and polynuclear leucocytes. There are fewer of the large cells present than in the sections of the brain from the acute case. The polynuclear leucocytes do not predominate in number over the other cells. In addition to the cells on the posterior aspect of the cord, where the exudate is thicker, it contains a material which stains very deeply in hæmatoxylin, and has an amorphous appearance. In this mass cell-forms can still be made out at times, but they do not stain. Nuclear fragments are also seen. This amorphous material may reach a considerable amount, and it is doubtless derived from the softening and disintegration of the exudate.

The pia is thickened in places by an actual new growth of connective tissue. This thickening is next to the cord, and is represented by foci of young and cellular connective tissue; in some of these there are already well-developed fibres with intercellular substance.

The nerve roots are not unaffected. Surrounding the veins are collections of round cells and the number of cells in the perineurium of the nerve

bundles and in the epineurium is much increased. This cellular proliferation is sometimes so extensive that it must have offered some interference to the functions of the nerve by the pressure exerted. The cellular proliferation in the nerve may actually obscure the nerve fibres. The fibres themselves show changes similar to those already described in the acute case. Following the vessels as they enter the cord, a cellular proliferation is often seen about them.

The meninges of the brain show in general the same condition as those of the cord. Sections made from various parts of the base covered with exudate show the latter to be composed of the same elements. Where the exudate is thickest the amorphous layer staining deeply in hæmatoxylin is also most pronounced. The pia is thickened by a new growth of tissue as well as by the exudate contained within its meshes. This new tissue is young, and where it occurs the pia is intimately adherent to the brain tissue. The vessels which pass in from the pia often show a proliferation of round cells in the perivascular lymph spaces, and such vessels may be followed for a considerable distance into the brain substance, the largest aggregations of these cells being seen in the neighborhood of the lateral ventricles. Here they reach a considerable size, are always associated with vessels, and are composed almost entirely of small round mononuclear cells, although a few polynuclear leucocytes may be seen among them. The lateral ventricles were, as previously stated, filled with pus. The epithelium of the ependyma is only in part preserved, and where it is deficient, cells with nuclei of a vesicular type forming a layer two or three cells thick are seen. In the pus adhering in the section to the ependyma, many fragmented nuclei exist. A single calcified area the size of a millet-seed was observed.

Sections of the brain and cord stained by Weigert's method showed fibrin to be absent. In sections the diplococci lanceolati were found, but only in small numbers.

The liver shows small collections of leucocytes (polynuclear) in the neighborhood of the portal spaces. The spleen is congested, and hemorrhages have taken place into the parenchyma. There is, in addition, a general hyperplasia of the lymphatic apparatus. A few "red blood-corpuscle-carrying cells" are to be seen, and many of these contain blood pigment as well.

(To be concluded.)

# REVIEWS.

THE PRINCIPLES AND PRACTICE OF SURGERY. By JOHN ASHHURST, JR., M.D., Barton Professor of Surgery and Clinical Surgery in the University of Pennsylvania; Surgeon to the Pennsylvania Hospital. New (sixth) edition, enlarged and thoroughly revised. In one octavo volume of 1161 pages, with 656 engravings and a colored plate. Philadelphia: Lea Brothers & Co., 1893.

WITHOUT question, Ashhurst's *Surgery* occupies a position among the foremost American Surgeries. It is terse and comprehensive; and when the more or less slipshod fashion in which medical text-books are often written is considered, one must admire the excellent literary ability displayed by the author. The book is compact (some Surgeries are as unwieldy as Webster's *Dictionary*), the presswork is faultless, and much judgment has been exercised in giving prominence to those points which most deserve it, without neglecting to mention everything else of value—the oldest ideas, the newest innovations. It is pleasant to see the extreme care with which credit is given to everyone to whom it is due, and the frequent processions of polysyllabic German, Russian, and French names attest thorough acquaintance with the literature of the subject.

The chapters on the eye and ear, which have been reviewed by Prof. George E. de Schweinitz and Prof. B. Alexander Randall respectively, present these specialties in their most modern aspects, and are as clear and full as limited space will permit; but it has always seemed to the reviewer somewhat unnecessary to cumber already sufficiently cumbersome Surgeries with subjects which are better considered in separate text-books at the disposal of every practitioner.

The statistics scattered through the volume are interesting and valuable, but they may become misleading if it is not borne in mind that they are often rather old. Hardly sufficient prominence is given to the fact that the modern principles of surgical cleanliness have materially altered many of the older statistical conclusions.

An excellent, and in the main successful, attempt has been made to bring the book up to the requirements of modern aseptic and antiseptic ideas; although the author states—contrary, certainly, to the experience of the majority—that while recognizing many advantages in the new methods, he has not found any marked diminution in mortality resulting from their use. Much stress is laid upon these questions in certain places, while in others there remains a somewhat inconsistent tendency toward older ideas and procedures. In the treatment of compound fractures, for instance, little if any stress is laid on the more recent methods, and the author speaks as though septic trouble were almost inevitable. No mention is made of antiseptic irrigation or immersion of the part in antiseptic fluids. We are not told that the surrounding skin

should be scrubbed and shaved, and otherwise rendered as far as possible aseptic; and the old bran-box treatment of Barton is recommended without reservation. Similarly, in compound injuries of joints, it is advised simply to hermetically seal the opening with gauze and collodion, or with lint dipped in the compound tincture of benzoin, and not a word is said about disinfection. Peculiarities of a like nature occur in other places—in the treatment of gunshot wounds, in the description of the operation of laparotomy, etc.

In presenting his method of preparation for an aseptic surgical operation, which is without doubt a good one, the author fails to mention the sterilization of the hands, which is surely of as much importance as many other things. He advises the mere submersion of instruments in a 5 per cent. solution of carbolic acid. With perfectly smooth and clean instruments this may suffice, but with the more or less rough ones in ordinary use, which are apt to contain dried septic material in their crevices, such immersion is not always effective, as has often been shown. Boiling or steaming is more reliable.

In face of what has recently been said and written, it is interesting to read that the author "cannot unite in the crusade against this most useful remedy (the poultice) in which some surgeons have engaged;" and that he countenances the closure of large, presumably aseptic, wounds with ordinary adhesive plaster.

Circumstances affecting the results of operations are fully discussed, and in such a manner as to assist in correcting the erroneous impression which seems to exist with many, that sepsis is the only danger worth considering in surgery.

The chapter on surgical bacteriology, by Prof. Nancrede, of the University of Michigan, is thorough, and in every sense of the term up to date. The only criticism which might be applied is that it is too thorough. It might have been better, perhaps, not to have attempted to squeeze so much into so limited a space; one would rather see something more general, which could be readily understood and remembered by the average student.

The article on gunshot wounds, although the author feels called upon to apologize for its brevity, is an excellent and comprehensive one. No mention is made, however, of the effects of the new, small-calibre, steel-coated bullets which are coming into use in various quarters and seem destined to supplant the older projectiles.

The articles on such surgical diseases as inflammation, erysipelas, tetanus, hydrophobia, etc., are what they should be. The author seems to adopt with some hesitation the generally accepted view that inflammation always depends upon the presence of pathogenic micro-organisms, although he states, in an inconspicuous footnote, that this is true in the large majority of cases. He emphasizes strongly and at length the part played by ordinary chemical and mechanical causes.

In the treatment of tetanus, after mentioning the older and newer methods, he remarks that "all means fail in acute cases; each has been occasionally successful in those of the chronic variety."

In regard to hydrophobia, he says: "Looking at the matter from a practical point of view, it must be confessed, I think, that the expectations raised by Pasteur's early publications have not been fulfilled." "The surgeon should therefore, I think, feel very certain that the victim of a dog-bite is really threatened with hydrophobia before advising a

mode of treatment which is not only of doubtful efficacy, but may in itself cause the very disease which it is intended to prevent."

The author holds very conservative views regarding chronic inflammations of bones and joints, and is not inclined to admit in its entirety the modern doctrine that these affections are tuberculous in by far the greater number of cases. As in the older editions of the work, struma, scrofula, and tuberculosis are carefully separated from each other. Many bone and joint affections, including "white swelling," are regarded as essentially scrofulous, and the tubercular origin of so-called cold abscesses is not mentioned.

In discussing penetrating wounds of the abdomen, doubt is expressed as to the reliability of Senn's hydrogen test, which may even do positive harm. In gunshot wounds, where there is uncertainty as to perforation of the intestines, a median exploratory laparotomy is advised, but in stab wounds the expectant plan is preferred.

It is of interest to note the position of so eminent and conservative a surgeon on the relative values of tracheotomy and intubation. Tracheotomy is preferred in most cases, and he adopts those statistics which show for it a lesser mortality.

The chapters on fractures and dislocations are clear and concise; but it is remarkable that mention is not made, in connection with Colles' fracture, of a method of treatment which is considered by many surgeons as by far the best, namely, reduction during over-extension of the wrist, and after-treatment without splints or with merely a retentive dressing which leaves the hand free.

In these days of daring brain surgery, the author still holds some very conservative views. In reference to trephining for extravasation of blood between the skull and surface of the brain, he says: "In the majority of instances the operation has been useless, or has even hastened death. Hence I cannot but think that as a rule the surgeon will do wisely to abstain from the use of the trephine in these cases, relying upon medical treatment, as in dealing with ordinary apoplexy." He also prefers not to operate in simple depressed fractures, with or without symptoms, and in impacted compound fractures, as he considers that an operation could do no good, "but would, by admitting the atmosphere, seriously complicate the prospects of recovery"—and this after agreeing with Lister, earlier in the volume, that the atmosphere may be disregarded as a source of danger.

Trephining for intra-cranial suppuration is also discouraged, unless an opening in the skull plainly communicate with the purulent focus. Of trephining for epilepsy, he says: "I can only say that I consider the operation usually unadvisable," and he takes a similar negative stand in regard to opening the skull for tumors and other "localized" lesions.

The good points in Ashhurst's *Surgery* so far outweigh the bad that the latter are scarcely noticeable unless one is on the lookout for them.

L. F.

ATLAS OF HEAD SECTIONS. FIFTY-THREE ENGRAVED COPPER PLATES OF FROZEN SECTIONS OF THE HEAD AND FIFTY-THREE ENGRAVED KEY PLATES, WITH DESCRIPTIVE TEXT. By WILLIAM MACEWEN, M.D. Quarto. New York: MacMillan & Co., 1893.

THE title of this book is unfortunate, as a bit of English, for the use of the word "head" as an adjective, although one sees it every now and then in journals and newspapers, is certainly indefensible, especially in the title of an important work. The work itself is an admirable one, and now that Dalton's *Topographical Anatomy of the Brain*, by a similar method, is out of print, we welcome the present work, since it will put into the hands of the general profession the means of making themselves familiar with frozen sections of the head. The only works with which the present volume can be compared are those of Aleck Frazer and Dalton. Frazer's plates are much larger, and also have the advantage of having a scale applied to them, and of being put, by means of superposition in outline, in relation with the external configuration of the skull, but the work is unwieldy and is also not so complete as the present one. Dalton, however, is not likely soon to find a rival. It is more perfect and beautiful as a work of art, although not more accurate, and in some respects not so full as the present work.

Dr. Macewen's atlas consists of fifty-three frozen sections of the head, with a key plate corresponding to the original plate, and in each case opposite to it. The sections are: coronal, twenty-four; sagittal, eleven; and horizontal, eighteen. All of the coronal sections are measured from the auriculo-bregmatic plane forward and backward; the sagittal, in inches, external to the median plane, and the horizontal sections are referred to a plane running through the middle of the external auditory meatus, and in a few cases to the plane of the orbits. They have the great advantage that they not only consist of sections in adults, but also of sections from two children of two and a half and five years of age, which gives the means of comparison of the anatomy of the brain in childhood and in adult life, well supplemented by Symington's and Dwight's atlases in particular.

The great value of these frozen sections of the brain *in situ* is to show the real relations of the parts of the brain *inter se*, and the brain and the skull in their relations to each other, which is the only proper method, since, when the brain is removed and sections are made, there is inevitable distortion from the effects of gravity and the loss of bony support to such a soft mass of tissue.

The first three plates are very striking in showing the dipping down of the frontal lobes near the middle line, and especially in emphasizing the thin osseous lamellæ which separate the brain cavity from the nasal cavity; and it is surprising that both surgeons and physicians have too frequently overlooked this ready means of infection. If, owing to the thinness of the osseous lamella separating the ear from the cranial cavity, diseases of the ear have so frequently resulted in abscess of the brain and meningitis, it would be singular indeed—in view of the frequent attacks of acute nasal catarrh with profuse suppuration, as frequently seen in an ordinary "cold in the head," and all the more in the very numerous cases of chronic nasal catarrh—if infection did not take place by this

ready nasal route. In fact, the recent views of Hirt and others, that all cases of meningitis, excepting, of course, the tubercular, are due to a diplococcus or streptococcus which is of infectious origin, seem to be supported and rendered probable by the observation of this fact.

Again, Dr. Macewen calls attention in several of the plates to the relations of the temporo-sphenoidal lobe to the bone and dura mater, and expressively says: "The base of the temporo-sphenoidal lobe is enclosed, as it were, in a box without a lid. Any pressure arising in the basal portion of the temporo-sphenoidal lobe will cause an expansion chiefly in an upward direction toward the convolutions of the operculum. The cerebral tissue near the middle line in the vicinity of the internal capsule, having no resisting structure on its inner side, has ample accommodation for displacement toward the lateral ventricle and the opposite side of the brain, and therefore pressure effects from expansion of the base of the temporo-sphenoidal lobe will affect much less the internal capsule than the upper and outer part of the cerebrum, which is bounded outside and above by the skull and on the inside by the falx." The relation, also, of the sinuses, especially the sigmoid portion of the lateral sinus, to the ear and the brain, and the relation of the mastoid cells to the brain, are admirably shown and must impress us with the importance, so little recognized until of late, of the effect of chronic disease of the ear especially in its relation to suppurative diseases of the brain and thrombosis of the lateral sinus.

The value of the book is immensely increased by the very full references in the key plates, and we can commend it most heartily to all who are engaged in work on cerebral surgery as something which will aid them in the study of the anatomy of the brain, and especially of the relation of that anatomy to surgical practice. W. W. K.

ILLUSTRATIONS OF THE NERVE TRACTS IN THE MID- AND HIND-BRAIN AND THE CRANIAL NERVES ARISING THEREFROM. By ALEXANDER BRUCE, M.A., M.D., F.R.C.P. ED. Edinburgh and London: Young J. Pentland, 1893.

THE volume before us consists of an atlas of twenty-seven beautiful lithographic plates. According to the modest language of the author, it is designed primarily for the use of students of neurology who are commencing for themselves the practical examination of the difficult region included between the lower end of the medulla oblongata and the nucleus of the origin of the third cranial nerve. We fancy, however, that there is not a neurologist living, no matter how great his attainments, who will not look upon these plates as a distinct and valuable acquisition to his library. Suffice it to say that the position, relation, and later development of all the nuclei associated with the cranial nerves just mentioned are illustrated in a way not to be found in any text-book of anatomy, or, for that matter, in any previous publication.

The illustrations have been made from sections of brains of fœtuses of five and a half months and upward, and from the brains of young children. They have been stained by the Weigert or Pal hæmatoxylin methods. They have been reproduced with an accuracy and

faithfulness that, it is safe to say, has not yet been anywhere approached. The clearness with which the courses of the commissures, bundles, and fibres are shown must be seen to be appreciated. Further, the plates, which are reproduced in the original colors of the stained preparations, are simply exquisite in finish, and reflect credit not only upon the author but also upon Mr. Cathie, the artist.

Only one familiar with histology can judge of the keen satisfaction that these exquisite representations afford, since in every detail of execution it is evident that the figures are not diagrams, but laborious and successful attempts to represent what was actually seen in the sections. They also reveal the high degree of technical skill which the author has attained in the preparation of sections of large area by means of the Weigert and Pal methods, supplemented by Upson's carmine.

The clearness with which the nests of ganglionic cells and fasciculi are thus brought out is not only pleasant to the eye, but also serves to illustrate the astonishing progress that the last twenty years have witnessed in histological methods, especially as applied to the nervous system. Each plate, in fine, may of itself be regarded as a work of art, apart from its scientific value. The explanations of the figures on the plates themselves are so clear and full that to a specialist or a skilled anatomist little more is required.

As a preface to this remarkable atlas, the author has placed two chapters of fifty-one pages; the first being a description of the cranial nerves, and the second a description of the tracts in the medulla, pons, and crura. Further, each chapter is enriched by numerous diagrams, which assist in elucidating the concise and clear text.

The volume is convenient in form; the type and paper beyond criticism; and it would be obviously unjust in speaking of this truly exquisite production not to pay a proper tribute to the publishers.

F. X. D.

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A Manual of Medical Treatment, or Clinical Therapeutics. By I. Burney Yeo, M.D., F.R.C.P., Professor of Clinical Therapeutics in King's College, London, and Physician to King's College Hospital. Vols. I., pp. xiv., 631; II., pp. vii., 744. With illustrations. Philadelphia: Lea Brothers & Co., 1893.

In reading a handbook of therapeutics we expect to find originality, not in matter but in form of expression. We are to see the author's selection of the important, and that which rests upon a sound scientific basis. The field is so vast that no one clinician can hope to personally verify the accuracy of the multitude of observers, nor weigh carefully all their reports. If an author can present the subject in the light of a mature judgment, discarding hasty generalizations from insufficient data, keeping in mind the ever-advancing sciences of physiology and chemistry, and so bring his work before the profession that it shall be a practical, readily comprehended, and reliable guide, he has met our expectations. The matter, in the greater portion, is not original, as frequent quotations from the System of Hare, and from Whitla, Dujardin-Beaumetz, Fagge, and to a lesser extent from others, readily show. That

the subject of treatment is presented concisely and clearly must be admitted. That it is a manual—a handbook—of marked convenience is due to its mechanical perfection, well worthy of the Leas.

In the first volume we find the treatment of diseases of the digestive, circulatory, and respiratory systems, pulmonary tuberculosis being excepted. At the outset we believe that the American practitioner will be somewhat surprised to have placed before him preparations of the British Pharmacopœia, *e. g.*, liquor strychninæ, succi belladonnæ, morphinæ acetatis liquor, and many others of unfamiliar dose and strength. He will also doubtless remark the large number of complicated formulas, many of which do not follow the classical construction of a well-chosen prescription, and which recall the poly-pharmacy of the past. We believe that the trend of modern therapeutics toward simplicity of prescription, lessening of dose with shortening of interval, not only aids greater precision in observation but as well diminishes the number of unpalatable mixtures. We note omissions of methods which are important: p. 41, the use of defibrinated blood (A. H. Smith) in rectal feeding; p. 126, menthol for vomiting, although it is mentioned under vomiting in pregnancy; p. 228, ipecacuanha *sine* emetina, and p. 242, naphthalin, excepting as enema, in dysentery; p. 178, olive oil in lead colic. We believe that resorcin, p. 57, is recommended to be administered in chronic gastric catarrh in too small a dose, and that it deserves much more notice than the author accords it. The caution that "care must be taken that the stomach-tube be not swallowed," p. 114, appears superfluous, nor do we consider the statement of Leube as to the cause of colica rheumatica of sufficient importance to be found on both pp. 164 and 204. We cannot believe that in appendicitis "when there is satisfactory evidence of suppuration having occurred" that a delay of "five or six days" before surgical intervention is ever justifiable. In the doubts expressed on p. 165 as to the practical value of the chemical examination of the contents of the stomach in dyspepsia, we see a failure to appreciate the masterly work of Hayem and Winter and of Ewald. We most heartily indorse the condemnation of chloral in the insomnia of cardiac disease, p. 340, although the same objection does not apply to chloralamide, and as well the strictures upon Oertel's "Terrain Kur." In the light of the recent work upon expectorants we are astonished to find that tartarized antimony and small doses of morphine are recommended in the treatment of acute bronchial catarrh (p. 480). With apomorphine, cocillana, and naregamia at hand we believe that the treatment of this condition should be modern. Terebene can frequently be substituted for turpentine, and a good (not commercial) syrup of hydriodic acid for the iodide of potash, with advantage. The use of the nitrites in cardiac diseases, other than in the symptom of angina pectoris, by no means receives the attention which it deserves. In the treatment of pneumonia the important point of the observations of Petresco (p. 573), the *massive* doses of digitalis, is entirely omitted; so also we do not find the valuable observation of A. H. Smith (p. 582) which gives the best indication for the use of the nitrites, the loudness of the pulmonic second sound. In washing out the cavity after incision for empyema, if peroxide of hydrogen be used, free outlet must be obtained, otherwise the gas resulting from its use may cause serious disturbance, a matter too frequently, as here (p. 628), overlooked. Modern antiseptic precautions demand that the skin shall be cleansed as well as the exploring needle

(p. 616) in exploratory punctnre. We believe that carbolic oil (p. 11) "smeared" over the surface is not now believed to be of value as an antiseptic, and we doubt if the use of "a rag" (p. 6) should be recommended for any medical purpose.

The second volume presents the treatment of phthisis, diseases of the liver, urinary and renal affections, diseases of the nervous system, constitutional and specific infectious diseases. The important points in the treatment of pulmonary consumption are set forth in a manner which challenges admiration. The omissions are few: (p. 24) creosote is often advantageously administered in the form of enteric pills, a method by far preferable to that of capsules with cod-liver oil, and Churchill's teaching in regard to the hypophosphites might have been followed more closely with profit. Matzoon is often better borne by the stomach than koumyss. The strontium salt is less likely to produce untoward symptoms than other bromide salts in epilepsy, and we believe that it deserves more consideration than it receives on p. 417. In the treatment of malarial fevers the carbamide of quinine for hypodermatic use should have been mentioned. The position taken by the author, that opium and morphine, if used freely, may relieve the restlessness of uræmia by the repose of death, is a commendable one. The devotees of Brand's method of treating typhoid fever will very properly find but little satisfaction.

The book shows a careful study of a few standard authors rather than an extensive reading of ephemeral literature. The view of the subject which he presents is a broad one and remarkably free from national coloring. It is of more even literary and scientific merit than a system, the work of many authors, could be, and also more closely in accord with the best of existing knowledge. The space devoted to clinical history and diagnosis may appear at times to be too great, yet if it be an error it is one which only adds to the size of the work. The index is not a full one; we are pleased that it is not an index of diseases and their remedies, it is sufficient for its purpose—to direct the search for information. The practitioner, the junior will find his knowledge broadened, the senior will lift himself out of his routine by a careful study of this book. From our acquaintance with the author's contributions to medical literature we have been led to expect much, and we have not been disappointed.

R. W. W.

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ERFAHRUNGEN UEBER DIE GALLENSTEINKRANKHEIT, MIT UND OHNE ICTERUS. VON PROFESSOR RIEDEL, in Jena. Pp. viii., 183. Berlin, 1892.

EXPERIENCE IN CHOLELITHIASIS, WITH AND WITHOUT ICTERUS. By PROFESSOR RIEDEL, of Jena.

THIS is a small volume filled with the richest experience in cases of gall-stone, given in the form of very full histories of a large number of cases arranged under the heads of pathological anatomy, arrangements of stones, clinical course, diagnosis, treatment, adhesions, and many subheads. To it is added an exhaustive tabulated list of the sixty-four operations studied in the book. Considering the great interest shown of late in surgery of the gall-passages and the wide and many fields from

which magazine material is gleaned, it has been a matter of surprise that this work has received no recognition whatever from the press and no attention from individual workers, to judge from their published articles. This is the more surprising, since works on the subject are very few indeed. Even foreign journals seem to have all but passed it by. The fact is that it is one of the most valuable contributions to surgery (and medicine) made for a long time, both as to the quantity and quality of the surgical work upon which it is founded and as to the clear and valuable deductions therefrom.

After opening with contrasting pictures of the early and late operation of the simple procedure the author has devised, with every circumstance favorable on the one hand, and the terrible obstacles to be met with in abandoned patients on the other, the changes in the *gall-bladder* are first stated. It has been met with so calcareous as to require breaking with a chisel; a few times so thick and dense as to crunch under the knife; never with the walls thinned—a condition generally thought quite common. Several unusual cases of diverticulum are worth mentioning: one large one without mucous membrane and with two openings into the gall-bladder; one without mucous membrane and containing a large cup-shaped stone blocking the opening, while in the latter was resting another stone; many wallet-shaped, bent upon the duct or bladder at an acute angle, and of course entirely blocking the outlet. In one-half of the cases stones were in the bladder alone. The *cystic duct* was compromised in 66 per cent. of the cases, but in only one-third of these was this from stones resting there, but "mostly from swelling resulting from the mutual disturbance which follows inflammatory processes in the bladder. If the stones are removed from the latter the swollen duct so quickly collapses that by the first change of dressing, gall flows from the fistula (fifteen times in twenty-eight cases) without any extraction of stone from the duct." This is the key to a great deal of the author's plan of work. Only once was the cystic duct obliterated without the bladder also. Of many arrangements of the stones in this passage one is noteworthy; one of the larger stones blocked the upper mouth of the duct, and this formed an intussusception into the bladder. The *common duct* was once so enlarged and thickened as to be mistaken for the bladder, and so stitched to the parietes. Only a few times were stones found in this duct alone. Once a large stone was found in the duct and one in the bladder with obliteration between. On one occasion the common and hepatic ducts were one and enlarged, and the bladder and its duct obliterated. The contents of this duct were never seen to be serum nor pus.

Of changes in the *liver* the author has made a distinct discovery: that its enlargement often takes the form of a long narrow "tongue-like projection" lying directly over the bladder as the latter enlarges. This projection, or even the more general enlargement, almost invariably occurs in cases "with icterus," for obvious reasons. Its cause is not made entirely clear, but that it may be of very rapid growth the observations of a colleague, made entirely in the dark as to what it might be, testify. To this observer is made this graceful and significant acknowledgment: "It is seen what great worth the observations of a single man have, even when he is practising in a small village, if they are quietly and objectively made. For through such observations we are advanced in our knowledge, and without them stand still, for we (the surgeons)

have before us many completed pictures, while our colleagues have the opportunity in their practice of studying the development of the disease." Several cases published as enlargement of the liver the writer suspects to be possessed of this tongue-like projection: is certain of it, and was puzzled by it in two cases of his own. *Perforations* close the section on pathology. These are rather infrequent, two through the abdominal wall being reported, one into the colon and through the abdominal wall, one into an encysted part of the peritoneum and into the colon and thoracic cavity, and one still worse, but of doubtful origin.

That the *clinical course* of cholelithiasis must be various is very evident after the above features, which are but a part of the many given. When it is added that the fullest histories of each case are given, including the operative procedures, it will be seen how valuable, even intensely interesting in respect to the latter, the book is. This varying clinical course is responsible in part for the differences between the practitioners of internal medicine and the surgeons, because the former see mostly the typical cases, those accompanied by the extrusion of small stones, while the latter have the anomalous cases and those with stones too large to pass away. But, for his ground for complaint against the physicians, the author takes the transactions of a late German congress and plainly shows by his exact observations some of their surmises to be incorrect. Hardly half of the cases of colic are from wandering stones, but from inflamed bladder containing stones; it may be from inflammation alone when there are no stones; from inflammation alone even while a stone reposes in the common duct. In like manner the appearance of jaundice may follow inflammation alone when there are no stones in the duct, or stones too large to wander into the duct. Inflammation as influencing the course of the ailment must be considered in its two aspects also, of chronic and acute.

After this insight into what may be below the surface we may be prepared for difficulties in *diagnosis*, especially since one-fifth of the cases before operation had had no colic, the symptom of more value than any other, and nearly as many had neither jaundice nor a tumor! The cases of cholelithiasis without icterus were mistaken by others twice for pyelitis calculosa, twice for tearing of the abdominal muscles, once for typhlitis, four times for wandering kidney, and two came with no diagnosis. The "tongue-like projection" contributed to this and other confusion. The appearance of icterus in the development of a case means obviously a step for good or for bad. The first question to be decided is: Is the icterus "real lithogenic," *i. e.*, caused by stone obstruction, or the "inflammatory" or "accompanying," *i. e.*, caused by inflammation accompanying stone? The latter causes little change in the liver because of its transient character; the former causes enlargement, and at the same time collapse or contraction of the bladder when it loses its concretions—the reverse pathological condition from cases "without icterus."

For *treatment*, "internal medicine and alkaline mineral waters are indicated in those cases which, without premonitory symptoms of long duration (weight in the stomach, nausea, occasional pain) suffer from an acute attack of colic with quickly following icterus. While premonitory symptoms fail it is generally to be assumed that the icterus is not an inflammatory one; further, that only small stones are present in the bladder, and they will eventually pass quickly through." For cases other than these, operation is alone to be considered, and again is early opera-

tion compared with late—*i. e.*, operation on the bladder, a trifling thing, compared with operation on the ducts, a very difficult thing; but "what will one or what will a few persons avail against a custom consecrated through centuries? On the strong walls of Carlsbad will every attack be shattered, indifferently whether thousands lose health or life through Carlsbad or not." But in spite of these protests against trifling, quiet-lying stones—such as are discernible but give the patient no indication of their presence—it is declared, are "not to be the subject for therapy" of any sort.

"Ideal cystotomy," even when practicable, is rejected entirely because it is apt to bring reproach upon surgery for incompleted work, because continuous drainage of the bladder is necessary for the restoration of its health and that of its appendages, and because dangerous back-pressure may occur from a great number of causes, even from swelling extending from the disturbance of the operation, or from minute blood-clots (colic secondary to operation)—circumstances clearly proven. Even with ten, twenty or more successive cases of successful "ideal cystotomy," the author would feel that the next, were it unsuccessful, could have been avoided by other procedure. The operation which *is* adopted for the bladder and its duct is cholecystotomy in two sittings! In these days, when such a procedure is looked upon as working very much in the dark, this will be hard to accept, but experience is the surest guide, and does not fail here. The chief reason is that continuous drainage promotes so far the collapse of the swollen mucous membrane that it allows the deeper-lying stones to present or extrude themselves. The writer has seen this; and in the thirty cases of double operation given, sixteen were at once successful, and of the remaining, thirteen corrected themselves later in this manner! The several other reasons will be passed over; the one of immeasurably greater safety will suggest itself; indeed the operation with its minute incision and refined technique, is declared devoid of danger. The remaining *fistula*, so often condemned, is held the great advantage, and the rarely-needed operation for its closure is easy.

The choice of operation for cases "with icterus" will depend on whether, again, the icterus is a "real lithogenic" or "accompanying inflammation." Since in fully one-third of the cases it is the latter, cystotomy, in two sittings, may often be adopted—provided, of course, the distinction can be made. For stones in the common duct the only procedure is the direct incision of the passage, and the further course depends on the cystic duct. If this is obliterated nothing remains but to close the common duct by sewing. If this is open, again is a fistula through the bladder provided; or, as stones are likely to be in the latter also, the bladder is first opened and provisionally closed, the common duct then opened and closed, and the bladder finally opened and affixed in the abdominal wall. A relatively long incision is always made in operations for "real icterus," and a tube is never used for early drainage, having once caused dangerous irritation. Crushing of stones is rejected, because remaining fragments may lead to new formations, and no man can operate a second time on the common duct. As the pages are turned, still more difficult operations appear: for gall-stones with appendicitis, with suppurative angiocholitis, with extensive pelvic suppuration, with carcinoma, for old stones in bladder and new in the common duct, etc. The technique of establishing fistula when the bladder

is too short to reach the parietes, as is often the case, is beautifully devised. The results, remarkably good, are given, as everything else, at great length, and the opinion is broached that this line of surgery, with its possibility of great difficulties, is not suitable for the general practitioner.

J. C. R., JR.

THE RECRUDESCENCE OF LEPROSY, AND ITS CAUSATION. A POPULAR TREATISE. By WILLIAM TEBB. Octavo, pp. 412. London, 1893.

THE author of this volume has travelled much over the world, and has utilized some of his time for the investigation of the problems of leprosy as it exists especially in Oriental countries and also in Europe. It is evident on the first page that he is opposed most strongly to the operation of vaccination, and that he regards this act as a prolific means of spreading leprosy. The increase of the disease, the question of its contagiousness, its inoculability, vaccination with reference to the disease, vaccinal diseases, and the general and special treatment and management of leprosy, are all considered. References to the well-known writers of to-day upon the subject, and official statistics, are abundant, and indicate that the author has entered upon the subject from a scientific standpoint, although his conclusions do not seem to be in all instances in keeping with the facts as presented.

The results of the investigations made may be summarized briefly as follows: Leprosy has greatly increased during the last fifty years, and it is now prevalent in many places where it formerly was unknown. The preponderance of authority is in favor of the theory that it is not contagious in the ordinary sense of the term, but that it is communicable by means of a cut, sore, or abraded surface, and that it is an inoculable disease. The most frequent opportunities of inoculating the virus of leprosy are afforded in the practice of vaccination, and this is a true cause of the diffusion of the disease, arm-to-arm vaccination being particularly dangerous. The author finally attempts to show that in certain countries leprosy has followed *pari passu* with the introduction and extension of vaccination. We commend the book to all those interested in the subject, believing that they will derive much information from its perusal.

L. A. D.

# PROGRESS

OF

# MEDICAL SCIENCE.

## THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,

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### A New Treatment of Diphtheria.

Sig. Bianchini Antonio presents his method, which is based upon the antiseptic action of phenic acid. Absorbent cotton, kept constantly moistened in a 2 per cent. solution, is worn about the neck, and by inspiration—for it is a valuable antiseptic—it is carried to the diseased surfaces (pharynx, tonsils, larynx). At the same time fifteen to thirty drops of tincture of the chloride of iron, dissolved in aromatic water and simple syrup, is given about every hour. In grave cases the affected parts are touched twice daily with the following mixture: Salicylic acid, 3; absolute alcohol, 20; resorcin, 2; and glycerin, 10 parts. By a careful examination of the urine the amount of phenic acid which is absorbed can be ascertained, and the use of the acid can thus be regulated. The advantages of this method are: 1. The ease of application of the remedies. 2. The action of the acid is continuous, regulated, local, and general. 3. From the first application the fever yields, but tends to again rise if the treatment is suspended. 4. The general condition improves from the beginning.—*La Riforma Medica*, 1893, No. 204, p. 647.

### Inhalations of Creosote in the Treatment of Tuberculosis.

Dr. Charles H. Merz, while admitting the value of creosote *per se* in treating tuberculosis, has failed to find this method so satisfactory in its results as he had hoped. In some cases it was detrimental in increasing the intensity of the faucial, pharyngeal, and pulmonary symptoms instead of relieving them. In cases of apyretic phthisis it has proven to be of more benefit than in any other form of the disease. Over-exertion in inhalations must be guarded against most carefully, and therefore they should be strictly controlled by the physician. The temperature of the inhaled air must be

closely watched, and the initial dose should be quite small. The remedy must be cautiously used if unpleasant results are to be avoided. Many cases are of such a nature that the use of an inhaler is a physical impossibility, solely from the lack of strength to properly use it. It is believed that the amount that can be introduced into the system by this method is quite small. Undoubtedly, in cases where there is an irritable or inflamed condition of the mucous membrane of the pharynx and larynx, inhalations of hot vapor, laden with chloroform or some sedative drug, will prove to be the means of securing comfort and ease; but when one is confronted with the theory that the inhalation of warm antiseptic solutions is sufficient to arrest a process of decay or breaking down of lung tissue, or that the mere presence of a vapor more or less heavily laden with an antiseptic is going to disturb the business habits of the bacillus tuberculosis, he thinks that he may be pardoned for confessing to a small degree of skepticism. It is doubtful whether creosote administered by inhalation possesses any real advantage, or any advantage at all, over the other means of administering it as commonly practised to-day.—*The American Therapist*, 1893, No. 4, p. 111.

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### Lavage of the Digestive Canal.

Dr. Antoine de Genersich has proposed the name diaclysm as a term for lavage of the digestive canal when it is intended that the entire canal shall be washed out. The fluid introduced into the rectum will ascend until the colon is filled; then with increasing pressure the small intestine, and later the stomach, will receive the fluid. The amount necessary is seven quarts or less before copious vomiting appears, and if the irrigation is continued the fluid entering the rectum is rejected, and this will cease only when the irrigation is stopped, when the current will be forcibly carried downward. In this manner we can cause ten or more quarts of fluid to flow from below upward without injury to the patient, although this procedure is not likely to pass for an agreeable pastime. By this method it is possible to entirely free the alimentary tract of any *materia peccans*, unless the patient be suffering from disease of the heart, arterial sclerosis, advanced pulmonary disease, or from some other general or local condition which may be a contra-indication. A solution of tannin, 1 to 2 per cent., made in boiling water and cooled to 98.6° or 100° F., is introduced, under the pressure of thirty-one to thirty-nine inches, into the rectum of a patient suffering from cholera, and the anus closed about the tube. The fluid is slowly introduced, and after five or six quarts have entered vomiting commences; and in the vomited water the presence of tannin is shown by the perchloride of iron test. After from seven to fifteen or more quarts have passed, the tube is removed, and the return current sets in, leaving behind only two or three quarts. The patient weak, cold, and asphyctic, already during the operation warms up, commences to perspire; the pulse is strong, and he becomes better, perhaps even he may be considered as rescued. The acid used in the irrigation is not considered to be of importance, the physiological salt, or any other solution which is not poisonous, would do as well. Tannin is, however, recommended because it has already been adopted by Cantani in the practice of enteroclysm, and serves not only as a disinfectant, but also as a styptic.

It is believed that not only does this method promise success in the treatment of cholera, but also in other intestinal poisonings and infections, acute or chronic, and in other diseases of the digestive canal. While an excessive pressure might cause perforation of the intestine in typhoid fever, tuberculosis, or intestinal gangrene, these conditions only demand that the flushing be done at the least possible pressure.—*La Progrès Médical*, 1893, No. 38, p. 201; and *Wiener medizinische Presse*, 1893, No. 39, S. 1517.

M. JULES DAURIAC, under the heading of "Total and Antiseptic Irrigation of the Digestive Tube," reports various experiments which had been conducted in order to ascertain the practicability and safety of this procedure. In a dog which had suffered from a very profuse diarrhœa, a lavage of a lactic acid solution of 1 per cent. resulted in cure. It was easy to make fluid escape by the mouth, and in this case seven quarts were used. In the obstinate fœtid diarrhœas so often found in idiots the lactic acid solution has resulted in cure, one lavage only being necessary (eleven cases). In some the diarrhœa reappeared after some time, but yielded to a new antiseptic irrigation. With a solution of creolin he has obtained equally good results. In five newborn infants suffering from green diarrhœa, one irrigation only of lactic acid has been sufficient for stopping it. In typhoid fever creolin has been used; the stools became less frequent, of more consistency, and lost their fœtid odor; the tongue again became moist and normal, and the general condition almost at once improved. The headache was lessened, the appetite returned, and the fever fell to about normal; the duration of the disease was lessened. In two instances of catarrhal icterus, simple cold water in one, in the other Vichy was employed, with the result of a rapid and real cure. In one case where the cause of the emaciation and diarrhœa was not determined, lavage produced a complete tænia, and the symptoms forthwith disappeared. This method can be used before surgical operations, or when certain purgation is necessary, as in intestinal obstruction.—*Le Progrès Médical*, 1893, No. 39, p. 217.

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## THE THERAPEUTIC ACTION OF MALAKIN.

DR. A. JAQUET reports concerning this new remedy, which may be called salicylphenetidin in that it is produced from phenetidin and salicylaldehyde with the withdrawal of water. The name is derived from μαλακὸς, mild, and it is found in small, transparent-yellow, fine needles. It is insoluble in water, with difficulty in cold, but rather soluble in hot alcohol. Experiments on animals (rabbits) prove that it is without influence upon the respiration or circulation, yet reduces temperature. The dose is fifteen grains, rarely one-half of that quantity, best administered in wafers. Sometimes after ingestion a peculiar odor is noticed (salicylaldehyde). In fourteen cases of acute articular rheumatism, a rapid and powerful effect was produced, four to six doses *pro die* being required. Occasionally perspiration is produced, but the untoward effects of the salicylic acid preparations have not been noticed. As an antipyretic it has an unmistakable action. In contrast to the rapid and energetic antipyretic effect of antipyrin and phenacetin is the slow and gradual effect of malakin, which does not give rise to collapse or chilly sensations. These observations were upon forty-eight cases (typhoid, croupous pneumonia, tuberculosis, erysipelas, and scarlatina). As an anti-neuralgic, twelve cases

are reported. In these cases the action is slow, so that for speedy relief other remedies must be resorted to. It can be stated, however, that it can be administered for neuralgias and habitual headaches for a long time without injury to the stomach.—*Correspondenzblatt für Schweizer Aerzte*, 1893, No. 18, S. 609.

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### The Treatment of Diarrhœa.

Dr. Alois Pick believes that opium plays a great rôle in the treatment. Next come the bismuth preparations, and especially the salicylate, at first in large doses in order that the powder may form a protective coating to the alimentary canal. In stomach disturbances, alum can be used with advantage. Tannin is seldom employed on account of its disordering the stomach. Sometimes the iron preparations are useful. The use of Glauber salts, as recommended by Trousseau, may be begun by the use of two and one-half-drachm doses, dissolved in water, and continued for one or two weeks in one-half the dose. In many chronic cases a preliminary emptying of the bowels, followed by styptic treatment, is necessary. In diarrhœa secondary to constipation, to strengthen the intestinal muscles, massage, electricity, and cold-water cures may be indicated. In nervous diarrhœa (of women), the electrical treatment with galvanism, or a strong faradic current, is valuable in diminishing the increased excitability of the intestines.—*Centralblatt für die gesammte Therapie*, 1893, Heft 24, S. 578.

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### The Absorption of Salicylic Acid by the Skin.

Dr. Bourget reports nineteen cases of inflammatory rheumatism treated exclusively by external use of salicylic acid, and he concludes that it is absorbed in a sufficiently large quantity from the skin for a rapid and perhaps for a more rapid cure than when given by the mouth. It suppresses the pain with surprising rapidity, diminishes the swelling, and the fever gradually falls. The ointment containing the drug is applied over the circumference of the affected joints, and the limb is covered with a flannel bandage. The urine for the twenty-four hours was carefully collected and examined to determine the presence of the remedy. The following conclusions are presented: 1. The absorption of the salicylic acid by the skin is rapid and marked. The skin of the young absorbs better than that of old subjects, of blondes better than brunettes. 2. The rapidity and intensity of absorption depends upon the vehicle in which it is dissolved. Fatty bodies are the only ones which allow the greatest penetration, while with vaselin or glycerin it is absent or slight. 3. The treatment of acute articular rheumatism with a terebinthinated salicylic ointment is strongly recommended. 4. This ointment is less efficacious in other forms of rheumatism, but it may be of assistance in the treatment of these affections by massage. 5. It has no value in gonorrhœal rheumatism. The formula recommended is: Salicylic acid, essence of turpentine and lanolin, of each ten parts, of lard one hundred parts. The amount of salicylic acid which is eliminated by way of the urine in twenty-four hours varies from three to nine grains.—*Revue Médicale de la Suisse Romande*, 1893, No. 9, p. 567.

### Salipyrin in Amenorrhœa.

Dr. Horatio R. Bigelow reports an instance where, after two fifteen-grain doses with an interval of two hours, a facial neuralgia disappeared and menstruation was established. Zurhelle has found that this remedy is more efficient than ergot, but points out that it is contra-indicated in certain pathological changes of the uterus. Many neuralgic women are deficient menstruators and menstruate painfully. In administering to the diseased nervous centres, or to an impaired circulation, you restore the monthly function to normal. Too much blood, unhealthy blood, anæmia, predispose to neuralgia, and disturb the menstrual function. A rheumatic, neuralgic, gouty, or malarious individual never performs these functions satisfactorily. The uterus is quite rarely at fault; the impaired nerve nutrition must be attended to. For the same reason that salipyrin will cure neuralgia, it will also cure amenorrhœa; it addresses itself to nutrition. The treatment by salipyrin was continued for two weeks, in the same dose, given three times daily. The sleep was undisturbed, appetite was improved, and the relief of both amenorrhœa and the neuralgia was complete.—*Notes on New Remedies*, 1893, No. 5, p. 66.

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### The Sedative Action of Duboisine in Continued Doses in Insanity.

Dr. E. Marandon de Montyel, in his service at Ville-Evraud, has administered this remedy as a sedative in continued doses during the day to thirty-five patients. The results have been marvellous, and in cases of agitation it often changes violent excitement into a perfect tranquillity. Unlike hyoscine, it does not paralyze the voluntary muscles, nor does it, like somnal, narcotize the patient. Its action is not immediate, for it may not be complete until the second, sometimes until the third day. When its effect has been obtained it persists quite regularly, so that ordinarily the patients do not experience regularly good and bad days. Further, it frequently happens that the improvement may continue for several days after the cessation of the medicine, and a period of calm, more or less prolonged, may be established. An important fact in its administration is, that when once a tolerance is established the patients ordinarily fail to be influenced by the drug, no matter how large the dose, and the marvellous sedation of the first days cannot again be obtained. The dose employed has been from one-thirty-second to one-sixth of a grain, in two equal portions at nine in the morning and at three in the afternoon, the patients receiving their food at seven and eleven in the morning and at five in the afternoon. The remedy appears to have an unfavorable action upon nutrition.—*Archives de Neurologie*, 1893, No. 79, p. 211.

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### The Action of Trional.

Dr. Oscar Collatz reports the result of the use of this drug as a hypnotic in sixty-six cases of insanity, generally in fifteen- to thirty-grain doses. It does not interfere with either the circulation nor the respiration, and the digestion is not impaired. Albumin is not found in the urine, nor are blood-

corpuscles nor evidence of blood-coloring matter present. The condition of the blood, even after several weeks' use of the remedy is normal. Although it is free from injurious after-effects, even after long-continued use, it is not an absolutely reliable remedy.—*Berliner klinische Wochenschrift*, 1893, No. 40, S. 966.

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### The Untoward Effects of Antipyrin, Acetanilide, and Phenacetin.

Dr. D. R. Paterson, from a study of the reports of twenty-five physicians to the South Wales Branch of the British Medical Association, presents the following conclusions: *Antipyrin.* Large doses depress the nervous system, positive results varying from an unpleasant diaphoresis to severe collapse. Most of them may be referred to the action on the nervous system, producing exhaustion and collapse following the fall of temperature; and there may be disturbance of the circulation for the same reason, or secondarily from the effect on the blood-corpuscles and the production of methæmoglobinæmia. Other symptoms, such as affections of the skin and pronounced psychical disturbance, are more rare. Minor degrees of depression are represented by unpleasant diaphoresis, which may be so profuse as to prostrate the patient temporarily. Continued use of even small doses not infrequently leads to a condition in which the patient complains of having lost his energy, is disinclined to exert himself and becomes depressed mentally; in short, there is established an antipyrin habit. Blueness of the lips and face is one of the concurrent untoward effects, varying from that which is first perceptible to a deep cyanosis with profound collapse. *Acetanilide* has been very early abandoned by many practitioners because of the frequent onset of symptoms of intoxication and the alarming appearance which they sometimes assume. The consensus of opinion is that symptoms of depression and collapse are more readily produced and are more marked than with the other drug; and this may be explained by the fall of temperature being greater and more rapid. Most of the reports mention cyanosis, and to a greater degree than after antipyrin. Anæmia may be induced by its continued use and become a grave condition. *Phenacetin* is more free from ill effects than either of the other two substances. Its depressant action on the nervous system and heart is manifest only when very large doses are given, small amounts, taken frequently, being borne without ill effects. It is not, however absolutely free from unpleasant consequences. Eisenhart reports a case which presented the symptoms of palpitation, oppression, dulness of hearing, then nausea and vomiting. With the onset of sickness all traces of intoxication vanished, and the patient felt well. Skin eruptions, chiefly urticarial, are said to be met with.—*The Practitioner*, 1893, No. 304, p. 241.

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### The Action of Strontium upon Renal Parenchyma.

Dott. Cesare Falcone notes the observation of Malbec, that the kidneys of a dog which had received the nitrate for nearly a month did not show any anatomical changes, although the liver contained a notable quantity of strontium. On the other hand, a dog which had taken the neutral tartrate for

more than a hundred days, on necropsy was shown to have a certain degree of renal congestion. Experiments with the lactate (dogs) show that there is a gradual but clearly marked diminution in the amount of urine passed. On the thirteenth day a trace of albumin appeared, and ten days later the amount could be readily determined, and the increase was continued until a large percentage was reached. The urobilin steadily increased in amount until, at the fourteenth day, there was a true urobilinuria. Microscopical examination of the urine showed granular and hyaline casts and red blood-globules. All of the facts point to an irritative process going on in the kidneys. Careful microscopical examination of the kidneys, after removal by necropsy, demonstrates beyond doubt that this remedy in long-continued administration produces an initial form of nephritis.—*La Riforma Medica*, 1893, No. 205, p. 651.

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### The Treatment of Secondary Syphilides.

Dr. Alfred Fournier believes that mercury is the specific *par excellence* in the treatment of these conditions. On the contrary, potassium iodide exercises an influence infinitely less potent. Of the mercurials he prefers, as most certain and efficacious, the sublimate and the protiodide; the former being especially reserved for tertiary manifestations, while the protiodide is better adapted for the conditions under discussion. The dose should be average ones, and indeed active, as one and a half grains for a man, a quarter of a grain less for a woman. Although in these conditions choice can be made between exclusively general and local treatment, reliance should be placed chiefly upon the former, although both are useful. The general treatment is directed not only to the lesion but to the disease as well; it for the present cures and for the future is a safeguard. If the general treatment alone suffices it is useless to impose upon the patient the external treatment. If in certain forms the internal treatment is impotent to cure rapidly, then external methods can be resorted to for relief, and to destroy at the same time the active centres of contagion.—*Revue gênérale de Clinique et de Thérapeutique*, 1893, No. 35, p. 545.

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### The Comparative Action of Iodoform upon the Staphylococcus and upon the Blood Corpuscles.

Dr. E. Maurel has attempted to reconcile the contradictory views held by biologists and clinicians concerning iodoform. It was found that the drug is not poisonous for leucocytes, but, on the contrary, their activity is increased in a manner proportional to the dose employed. But at the same time there is the same action upon them as in febrile temperatures, a compensation between the activity and the longevity of the leucocytes—one can only increase at the expense of the other. Even in large doses the drug is without action upon the red blood-corpuscles. So far as the drug acts upon the staphylococcus, the conclusion which has been reached by many other experimenters is now confirmed that it does not sensibly modify the reproductivity of the staphylococcus. When, at the same time, both the staphylococcus and the blood corpuscles are placed under the influence of iodoform, it has been found: 1. That it attenuates the virulence of the staphylococcus. 2. The

staphylococci, which have lost a great portion of their virulence toward the leucocytes, have entirely preserved their reproductivity. The general conclusions are: That we must recognize three distinct properties in each pathogenic microbe: Its virulence; its reproductivity; its tenacity of life. 2. The efficacy of iodoform against the staphylococcus, which has been thoroughly established by the clinicians, is due to its faculty of increasing the energy of the leucocytes and of diminishing the virulence of the staphylococcus. We find here the explanation of the apparent contradiction between the observations of the clinic and of the laboratory.—*Bulletin général de Thérapeutique*, 1893, 36e livr., p. 241.

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### The Antiseptic Power of Ichthyol.

Dr. Rudolf Abel, from his careful experiments in the laboratory, has reached the following conclusions: 1. The ichthyol preparations (ammonium and sodium) in weak solutions and in a short time destroy the pyogenic and erysipelas streptococci. The action of various commercial preparations is practically identical. Ichthyol is used with success in the suppuration from these cocci. 2. The staphylococcus aureus and albus, the bacillus pyocyaneus, the bacillus of typhoid, ozæna, and anthrax, the spirillum of Asiatic cholera, show more or less resistance to ichthyol, in that when pure it must act upon them by the hour in order to destroy these organisms in cultures. 3. The diphtheria bacillus in fresh colonies is easily destroyed by weak ichthyol solutions, while mature ones are acted upon with difficulty. Therefore it is useful in diphtheria only in prophylaxis. 4. Ichthyol has rendered good service in the treatment of typhus and ozæna, although it can only with difficulty make harmless these infections. 5. It is recommended that it should be preserved only in substance or in a 50 per cent. solution; weaker solutions may be culture mediums for micro-organisms, as the staphylococcus aureus. Weak solutions should be sterilized by heat, which has no influence upon its properties.—*Centralblatt für Bakteriologie und Parasitenkunde*, 1893, No. 13, S. 413.

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### The Influence of Chloroform upon the Respiration and Circulation.

Drs. H. A. Hare and E. Q. Thornton, after an elaborate and painstaking series of experiments, believe chloroform to be safe for the majority of cases, provided it be given by one who is skilled in its use, and who not only knows how to give it, but to detect signs of danger. It is not so safe as ether at any time, other things being equal, and never so safe in the hands of a tyro. The respiration should be watched, because so soon as enough chloroform is used to endanger the circulation the respiration will show some abnormality. Death in the healthy animal is always due to respiratory failure, accompanied by circulatory depression which may be severe enough to cause death, even if artificial respiration be skilfully used. Chloroform may be chosen in hot climates, when a large number of persons are to be rapidly anæsthetized; in Bright's disease, in aneurism, or great atheroma of blood-vessels; in children or adults who already have bronchitis; to persons who struggle violently. The safest method of administration is by Lawrie's or

Esmarch's inhaler, because these provide for circulation of air, and do not distract the attention of the anæsthetiser from the respiratory movements by complicated apparatus.—*Therapeutic Gazette*, 1893, No. 10, p. 672.

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### The Action and Uses of Pental.

Dr. David Cerna summarizes his conclusions as follows: 1. Pental possesses general anæsthetic properties. 2. The local anæsthetic effects produced by the drug are feeble. 3. Pental anæsthesia is rapidly established, but it also quickly disappears. It is chiefly of centric origin. 4. Pental depresses the circulation to a dangerous degree, causing a fall of the arterial pressure, and of the rate of the pulse, the latter phenomenon being followed by an increase even above the normal standard. 5. The lowering of the pressure is due to an action upon the heart and to a stimulation of the peripheral cardio-inhibitory centres. The vasomotor system is apparently not affected by the drug. 6. Under pental the pulse-rate is decreased at first, due similarly to a direct cardiac influence and to excitation of the cardio-inhibitory centres peripherally; the secondary increase to paralysis of the latter; and the final diminution to an action upon the heart. 7. The respiratory rate is increased through a direct action of the agent upon the respiratory centres. The respiration is afterward depressed by an influence exercised upon the same. The drug sometimes causes the Cheyne-Stokes type of respiratory movements. 8. Pental produces death mainly by cardiac paralysis. Sometimes, however, the heart and respiration stop simultaneously; at others a fatal issue is the result of respiratory failure. 9. The drug in poisonous amounts diminishes to a certain extent the irritability of the cardiac muscle. 10. Pental dilates the pupil, this phenomenon being probably of centric origin. 11. The narcosis of pental is not unattended by unpleasant after-effects, the action of these being principally that of excitement. 12. Pental cannot be considered as a safe or even as an efficient general anæsthetic, and is certainly inferior to ether and chloroform.—*American Medico-Surgical Bulletin*, 1893, No. 10, p. 918.

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### Limitations of the Use of Nitro-glycerin in Chronic Nephritis.

Dr. D. D. Stewart states that in his opinion, when it is desired to employ this drug over a considerable period of time for its effects on blood-pressure, the best rule of administration is to so proportion the dose that the intervals are comparatively short—never less than four times daily—and the amount, though sufficient to produce some subjective or objective effect, never more than that just necessary to cause the *slightest* feeling of fulness in the head or to slightly quicken the pulse. When a rather rapid increase seems necessary to maintain a constant effect, an equally important point is to temporarily discontinue the drug for two or more days, at intervals of two or three weeks. On its resumption a much smaller initial dose will be required to produce physiological effects than that last taken.—*The Therapeutic Gazette*, 1893, No. 9, p. 604.

# MEDICINE.

UNDER THE CHARGE OF

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## Death from Laryngeal Spasm in a Case of Hysteria.

Leo (*Deutsche medicin. Wochenschrift*, 1893, No. 34, p. 809) has reported the case of a man, twenty-one years old, who had long suffered, particularly in the morning on arising, from headache and vertigo, unattended with vomiting. At the age of eleven years he had had an attack of chorea, involving the left upper extremity and the left side of the face, and lasting ten weeks. At the age of eighteen years, a week after receiving a blow upon the head, twitching again appeared, beginning in the fingers and successively invading the left upper extremity and the left lower extremity; the muscles innervated by lower branches of the left facial nerve, and to a slighter degree the upper branches; and from time to time appearing in the trapezius muscle. These manifestations disappeared after a course of treatment with potassium bromide. Two years later the twitching recurred with loss of consciousness, it was said, and lasted ten weeks. It then remained absent for nearly a year, when it returned, with headache and vertigo, but without loss of consciousness. Persistent clonic twitching was observed in the triangularis menti. The tongue presented slight choreic movements, but was protruded in the middle line. The left upper extremity was thrown about by alternate tonic and clonic movements. The tonic spasm involved particularly the flexors of the fingers and of the hand. There were also clonic movements in the thigh and leg of the left side. Tonic spasm was present in the muscles of the trunk, giving rise to a certain degree of bowing of the body. There were no contractures and no impairment of motor power. On examination it was found there was complete anæsthesia of the upper and lower extremities of both sides, and in less degree of the left side of the face and head. The reflexes in the upper extremities could not be elicited with certainty; those in the lower extremities presented no abnormality. The fundus oculi and the fields of vision were normal. Three days later the patient had a convulsion in which the head was thrown back into the pillow and the trunk slightly raised from the bed, while active movements took place in the muscles supplied by the facial nerve, particularly in the triangularis sterni. The arm was raised and abducted and the forearm flexed on the arm, with tonic spasm in the extensors of the second and fourth fingers. In the lower extremity there was tonic spasm of the muscles of the calf, the tip

of the foot being turned downward. There were also clonic convulsions in the quadriceps femoris. Convulsions of a similar nature recurred once or twice daily for some time. Treatment with narcotics and electricity proved unsuccessful. Considerable improvement, however, followed the subcutaneous administration of hyoscine hydrobromate, of which at first gr. $\frac{1}{300}$ was used daily, and subsequently gr. $\frac{1}{150}$. The spasm diminished in frequency and severity, but the anæsthesia persisted. After the lapse of a month another left-sided convulsion occurred, for the control of which subcutaneous injections of morphine were employed. Twenty-four hours after this attack, another of even greater intensity occurred, marked by intense inspiratory dyspnœa, deep cyanosis, retraction of the neck, chest, and abdomen, together with singultus. Attempts to induce artificial respiration failed, and amid increasing dyspnœa death took place. Upon post-mortem examination the brain and membranes presented no abnormality other than slight œdema and hyperæmia. The larynx contained no foreign body and was not œdematous, but the vocal bands were firmly adducted, so that water could not pass the rima. The hysterical nature of the affection was recognized during life, and the post-mortem examination afforded a confirmation of the diagnosis.

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### Pseudo Cerebro-spinal Sclerosis of Malarial Origin.

Triantaphyllides (*Archives de Neurologie*, xxvi., No. 79, p. 232) has reported the case of a man, thirty-six years old, who was seized with malarial fever, at first of regularly quotidian type, but later of irregular type, compelling him on account of debility to take to his bed between the twentieth and twenty-fifth days. Upon examination at this time the man was found to present the facies of paludal cachexia. The expression was pathetic and weeping was frequent. Speech was slow and scanning, just as in cerebro-spinal sclerosis. In repose the patient presented no tremor, but upon attempted movement there resulted tremor proportional to the extent of the movement. Nystagmus was present. When the patient was assisted to raise his head he was seized with vertigo, trembling of the whole body, muscular rigidity, and beginning loss of consciousness, but an epileptiform seizure was averted by lowering the head. The tendon-reflexes of all four extremities were exaggerated. Common sensibility and the special senses presented no deviation from the normal. The liver and the spleen were enlarged, the latter being palpable and indurated. The tongue was moist and but slightly coated; the appetite was lost; the bowels were constipated. The treatment consisted in the subcutaneous injection daily of twenty-two grains of quinine dihydrochlorate. After the second injection the patient was able to raise his head without the development of the premonitory symptoms of an epileptiform seizure, and after the fourth injection the vertigo was so much relieved that he could hold himself erect for several minutes at a time. The intention tremor was also less pronouncéd, the general *morale* was improved and the appetite was returning. After the fifth injection had been given, quinine was also administered by the mouth in daily doses of eighteen grains. Four days later the patient was able to be about, supported upon a cane. In walking, the gait was that of postero-lateral sclerosis, the rigidity in the lower extremities disappearing when the patient was at rest. The vertigo was now

but transitory and the other symptoms were much less decided than they had been. Upon examination of the blood, pigmented bodies and crescents were found. A sixth subcutaneous injection of eighteen grains of quinine was given, and the daily dose of eighteen grains *per os* was continued. After two days more the vertigo had disappeared, the speech was less scanning, the gait was more nearly normal, and the reflexes were less decidedly exaggerated. A seventh injection of twelve grains of quinine was given. The improvement continued progressively until all of the abnormal manifestations had disappeared, perfect recovery ultimately ensuing.

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### A Case of Pure Word-blindness.

Hoisholt (*Occidental Medical Times*, vol. vii., No. 9, p. 483) has reported a case of word-blindness and music-blindness without agraphia. It occurred in a musician, sixty-three years old, who had held numerous important positions, which he had lost as the result of excessive indulgence in alcohol. There was no special hereditary predisposition and no history of syphilis. The man was quiet and gentlemanly in demeanor, but untidy in habits. While cognizant of time and place he was somewhat confused, and his memory of recent events was impaired. His language was coherent, and there was no evidence of the existence of hallucinations, further than that he seemed to think that he had been badly abused and had been deprived of his former position by persons who were jealous of him because he could play better than they. Speech was normal, both in form and arrangement. The intelligence of the man, and the comprehension of what was spoken to him, likewise seemed to be normal. He was able to spell words correctly, and also, upon dictation, to write properly his name and a number of short English words, but there was an inability to read what had been written, even his own name. He would generally read the letters of the alphabet correctly, but he was unable to read the smallest words. The ability to see and to recognize objects at a distance was preserved. The man was passionately fond of music, and when given a violin played from memory the most difficult passages without a fault. When requested to play by note he tried to do so, but failed, hesitating and playing something not before him. He was unable to correctly name any written note. There was no palsy; the gait was normal; the knee-jerks were preserved and equal. There was imperfect control of the rectal and vesical sphincters. Sensation was preserved. The pupils reacted to light and in accommodation. Hearing was impaired, and there was complaint of imperfect vision. It was observed that on looking sharply the patient would turn his head to one side, and careful examination showed that there was left homonymous hemianopsia. For a time there was some improvement in the general condition, but finally the visual defect became more pronounced, the fields of vision becoming more and more contracted until there was total blindness, while the pupils grew larger and failed to react to light. Retention of urine appeared as an additional complication, so that daily catheterization became necessary. Subsequently weakness of the sphincter ani set in, with fecal incontinence. Death ultimately ensued as a result of the cystitis that developed. Upon post-mortem examination the whole occipital lobe of the left side of the brain

presented a yellowish-green color, and, viewed from above, appeared to be depressed below the general level. The convolutions of this area were reduced in size. These changes extended forward and upward into the angular and supra-marginal gyri, and inward along the median surface of the occipital lobe, the tip of which was quite softened. The posterior part of the right hemisphere was of a yellowish-red color, from the occipital lobe upward and forward, a little beyond the limits of the change of color upon the left side. The convolutions were flattened, but not so narrow or contracted as those upon the opposite side. The cortical substance around the posterior extremity of the first temporo-sphenoidal convolution (angular gyrus) was somewhat depressed below the level of the surrounding surface and presented several hemorrhagic spots from the size of a pinhead to that of a pea, some of them extending through the whole thickness of the cortex. Smaller hemorrhages were also visible on the median surface of the occipital lobe in the lobulus fusiformis.

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### Cases of Sporadic Cretinism.

The *Lancet*, 1893, No. 3662, contains the reports of four cases of sporadic cretinism treated by thyroid extract by Wallis Ord. He observes in conclusion, that there was an absence of the symptoms of discomfort due to treatment usually met with in myxœdema. The doses given were quite equal to those used for adults, and only a slight rise of temperature was observed. Symptoms of improvement did not appear as soon as in myxœdema, no change of importance being noted during the first week. In three cases there was a marked diminution in weight at first; after a time there was a progressive increase apparently due to a deposit of healthy adipose tissue. The excretion of urea was decidedly increased under treatment in two cases. In a third the percentage before treatment was much above the normal, and became subsequently diminished. The rate of improvement was more marked in proportion to the age of the patients, the youngest improving the most. The eldest patient was nine years, the youngest nine months old. Two of the patients developed under treatment profuse sweating of the head accompanied by a most disagreeable, almost fecal odor. Three of the four patients were males.

The same issue contains an account of two cases of the same disorder, a male and a female, similarly treated by Paterson (Ascot) and Hellier (Leeds). In both, the results of treatment were satisfactory.

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### Foreign Bodies in the Blood in Pernicious Anæmia.

Perles (*Berliner klinische Wochenschrift*, 1893, No. 40, p. 963) reports three cases of well-marked pernicious anæmia, in each of which he found in the blood delicate, highly refracting bodies, capable of spontaneous movement, and which, it is suggested, may be protozoan parasites, directly or indirectly destructive of the hæmoglobin contained in the red corpuscles. The blood was examined in the moist chamber or in the hanging drop. The bodies lay between the corpuscles, and were in active movement. They averaged from 3 to 4 $\mu$ in length, less than 1 $\mu$ in width, and about $\frac{1}{3}$ $\mu$ in thickness. Appendages of varying length were here and there visible, but well-developed

flagellæ could not be distinguished. The number of the organisms present appeared to be in direct proportion to the gravity of the case. Attempts to cultivate the organisms upon artificial media, and to stain them with the ordinary colors, proved unsuccessful. The same organisms were not found in the blood in a large number of cases of secondary anæmia examined.

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### Two Cases of Scapulo-humeral Palsy of Peripheral Origin.

Meyer (*Deutsche medicin. Wochenschrift*, 1893, No. 34, p. 810) reports two cases of scapulo-humeral palsy of peculiar etiology, one corresponding to the type first described by Erb, and the other of an allied character. The first case occurred in a man, twenty-one years old, who received several stab wounds, one of which was situated at the upper angle of the inferior cervical triangle of the left side. There was considerable hemorrhage, for the control of which it was necessary to ligate the external jugular vein. At the time there appeared to be some paresis of the left upper extremity. After the wound had closed the left arm hung relaxed and flabby and was the seat of persistent sharp pain. Three-quarters of an inch above the clavicle, directly over the clavicular portion of the sterno-mastoid muscle, and corresponding to the situation of the brachial plexus, was a dense adherent cicatrix. The deltoid muscle was somewhat wasted and completely paralyzed. The pectoral muscles were well developed and intact. Of the elevators of the humerus the trapezius only appeared to be intact. The teres major and teres minor, the supra-spinatus and the infra-spinatus appeared to be paretic. At rest the contiguous borders of the scapula were parallel; the serrati were active. Attempts to elevate the arm gave rise to an appearance as if the shoulder-joint were ankylosed, though passive movement was unrestricted. Rotation was greatly impaired. Flexion of the forearm, whether pronated or supinated, was impossible; supination was restricted. The affected muscles presented reactions of degeneration. Upon the radial aspect of the arm, anteriorly and posteriorly, sensibility was distinctly impaired, particularly in the regions supplied by the supra-scapular, axillary, anterior and posterior brachial, cutaneous and median and lateral cutaneous nerves. Upon the thenar eminence the area supplied by the median nerve also was insensitive. The pressure-sense and the temperature-sense presented no appreciable alteration.

In the cases described by Erb, the palsy involved the deltoid, the biceps, the brachialis anticus, and perhaps the supinator longus and supinator brevis. Anatomic and experimental investigation showed that the lesion was to be found in a certain circumscribed portion of the brachial plexus, at the point where the fifth and sixth cervical nerves make their exit from the scaleni muscles to unite and give origin to the supra-scapular nerve. The causes that have been present in the cases of this type of palsy hitherto reported are as follows: a fall upon the shoulder; excessive adduction of the arm; excessive abduction and elevation; crushing of the shoulder and traumatism; direct pressure; essential neuritis.

The second case was one of unusual birth-palsy. It occurred in a child that was delivered with the forceps after a difficult labor, the head presenting an obstruction to the delivery of the shoulders being encountered. On the

second day it was observed that the child failed to move the right arm, while it properly moved the right hand. The whole arm and particularly the hand was blue. There was slight movement at the shoulder from the action of the trapezius. The fingers were held in flexion; the arm in pronation. During flexion and extension of the hand, the arm remained at rest. There was apparently a palsy of the biceps, supinator longus, and deltoid, and perhaps also of the trapezius and pectoralis major. The deltoid and biceps were more relaxed and smaller in size than upon the opposite side. Movement of the arm or manipulation of the skin caused the child to cry. The application of the electrodes appeared to cause pain. The electric examination yielded unsatisfactory results. At a later date reactions of degeneration were found in the biceps, deltoid, and supinator longus. After long-continued electric treatment with the faradic current, almost perfect recovery ensued. It is inferred that the palsy in this case, which bears some similarity to the palsy described by Erb, is to be ascribed to pressure upon the brachial plexus during delivery.

HOCHSTETTER (*Berliner klinische Wochenschrift*, 1893, No. 42, p. 1016) has reported the case of a primipara, eighteen years old, with a generally contracted pelvis, in which exhaustion of the labor-pains and threatened death of the fœtus necessitated the high application of the forceps. After the birth of the somewhat asphyxiated child a depression made by the blade of the forceps was seen upon the right brow, and another at the anterior margin of the left trapezius muscle, a little above the clavicle. On the following day it was found that the left arm was palsied, the loss of power increasing for another day, but subsequently subsiding. The child appeared to have lost the power of abducting the arm. The forearm was held in a position of pronation, with the hand strongly flexed, the dorsum of the hand being swollen and the fingers generally flexed. The muscles of the arm, particularly those of the extensor aspect, were relaxed. Electric stimulation of the nerves with both primary and secondary currents failed to induce contraction, although the muscles responded to direct stimulation. There was neither fracture of bone nor epiphyseal separation, so that the condition was ascribed to compression of the brachial plexus by the forceps in the process of delivery.

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### EPILEPSY OF CARDIAC ORIGIN.

ROSIN (*Wiener medicin. Presse*, 1893, No. 43, p. 1677) reports a case of myocardial degeneration of arterio-sclerotic origin, in the course of which epileptiform convulsions appeared. He also refers to eleven cases of similar kind that he succeeded in collecting from the literature. In the case in question, a woman, who had previously enjoyed perfect health and was free from hereditary neuropathic predisposition and a history of alcoholism or syphilis, at the age of forty-nine years began to have attacks of tachycardia, without recognizable cardiac lesion. The paroxysms at first recurred every six or eight weeks, setting in suddenly and terminating as abruptly, and lasting for several hours. During the attack the face became pallid, and an abundance of limpid, almost colorless urine was passed. Subjectively there was a sense of cardiac tumult, together with a feeling of oppression and general distress. In the course of time the attacks increased in frequency, finally occurring

once a week, usually toward night, and lasting for three or four hours. After the lapse of some six years the attacks became still more frequent, and permanent arrhythmia manifested itself, with increase in the area of cardiac percussion dulness, an accentuation of the second aortic sound, and tortuosity and resistance of the peripheral vessels. It was now that the diagnosis of myocardial degeneration of arterio-sclerotic origin was ventured. Exertion was attended with shortness of breath and anginal symptoms. In the third year of this train of symptoms the woman was seized during sleep at night with an attack indistinguishable from an epileptic paroxysm, attended with incontinence of urine and followed by sopor and dulness. In the following ten years, up to the time of death, there occurred seven additional attacks of the same kind, all at night, in the midst of profound sleep. The last attack, the eighth, was the immediate cause of death. For the last five years of life five or six larval attacks occurred annually, preceded by an aura referred to the præcordium or epigastrium, and consisting in transitory nausea associated with great pallor and hallucinations. From a study of the case reported, and of the collected cases, it is concluded that disease of the heart and great vessels may constitute a cause of epileptic attacks. Such an etiology may be accepted in a given case if all other causes have been excluded. This variety of epilepsy may attend any form of cardiac disease, although myocardial degeneration and arterio-sclerosis are particularly prone to be active in this direction. The resulting condition depends upon a nutritive disturbance of the brain, in consequence of circulatory derangement, particularly in the motor area. There may, besides, be degenerative changes in the cerebral vessels. A special individual predisposition appears to be necessary for the development of this complication, as it is rather uncommon in connection with disease of the heart. Sleep seems to favor the occurrence of the paroxysms. Therapeutically, the remedies indicated are digitalis upon the one hand, and bromides upon the other.

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### Exophthalmic Goitre Fatal in the Course of Fifteen Days.

Reymond (*Bull. de la Société Anatomique de Paris*, 5e sér., t. vii., No. 18, p. 456) has reported the case of a woman, forty-five years old, without neuropathic heredity, who had presented continuous tremor for more than a year, following emotional disturbance. Twelve days before coming under observation she was subjected to great agitation by reason of the dangerous illness of a daughter. Power was at once lost in the lower extremities, and the thyroid gland became enlarged, with progressive increase in size. The eyes were brilliant and presented a strange aspect, although they did not protrude. The cheeks were flushed and a constant tremor prevailed. Sensibility and motility were impaired in the lower extremities. An eruption of acne was present upon the back. The thyroid gland was notably enlarged. Upon auscultation, a systolic murmur was heard at the apex of the heart, notwithstanding the weakness of cardiac action. The patient vomited all that she took. Swallowing even of liquids was attended with much difficulty. The pulse was 125 in the minute. The temperature was 100.4° on the first day of observation, becoming, however, 102.2° a day later, and 104° at the time of death, on the third day. Upon post-mortem examination, the walls of the

left ventricle were found thickened, and the mitral valve incompetent, with its leaflets thickened and deformed. The thyroid gland was as large as an orange, its bloodvessels greatly distended. In the upper portion of the left lobe was seated a cyst, with hard and thickened walls and containing brownish fluid. Upon histological examination there appeared to be a hyperplasia of the epithelial cells of the thyroid gland, but without their characteristic follicular arrangement. The thymus gland was present. The peribronchial and peritracheal lymphatic glands were anthracotic, some hard, some soft. The cerebral vessels were also distended with blood. The ganglia of the cervical sympathetic presented no appreciable alteration.

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### The Etiology of Leukæmia and Pseudo-leukæmia.

Verdelli (*Centralbl. für die medicin. Wissensch.*, 1893, No. 32, p. 545) has reported two cases of pseudo-leukæmia and one case of leukæmia, in all of which, both by culture, from the lymphatic glands and from the blood, and in sections of various organs, he was able to demonstrate the presence of staphylococci pyogenes in pure culture (in the first case staphylococcus albus, in the second staphylococcus aureus, in the third staphylococcus aureus and albus). In the first, staphylococci were found in an axillary gland extirpated three and a half months before death; in cultures from the blood of the heart two hours after death; and some cultures prepared at the autopsy, from lymphatic glands, as well as in sections of these glands treated by Gram's method. In the second case, cultures from an inguinal lymphatic gland excised twenty-one days before death, yielded negative results, although staphylococci were found in sections of the gland, as well as in cultures prepared two hours after death from blood from the heart and from the femoral vein, and in various organs. In the third case, staphylococci were obtained six hours before death in pure culture from blood from one of the fingers, and immediately after death, from supra-clavicular, epitrochlear, and inguinal lymphatic glands, from the blood, and from the spleen. By introduction of these cultures into the peritoneal cavity and subcutaneous connective tissue, as well as by the introduction of bits of excised glands into the peritoneal cavity, the following results were obtained in rabbits: 1. Enlargement of lymphatic glands, spleen, and liver. 2. Round-celled infiltration, diffuse or circumscribed, resembling the appearance presented by lymphoma, especially perivascular, principally in lymphatic glands, spleen, liver, lungs, less commonly in the kidneys. 3. Slight thickening of the connective tissue of all the internal viscera. 4. More or less marked and extensive atrophic and necrotic processes involving the parenchymatous cells (of lymphatic glands, spleen, liver, and lungs, but especially liver and kidneys) in special relation with the inoculated infectious agent. 5. A slight but indubitable arteritis, particularly of the medium-sized and smaller vessels, of varying intensity in different organs, but always more pronounced in spleen and lungs. Variations in the histological changes were obtained by the repetition at intervals of several days of intense inoculations, the animals dying before sufficient time had elapsed for the changes described to have assumed a chronic character. All in all, these changes bore a close resemblance to those of leukæmia and pseudo-leukæmia. Investigation in one case into the urotoxic coefficients was not

conclusive, although it appeared that in frogs the respiratory and cardiac frequency were diminished, and that the irritability of the animals while slightly lessened immediately after the injection, increased considerably until opisthotonos, lasting for a short time, was developed; again diminishing as death was approached. From a comparison of the two cases of pseudo-leukæmia the inference is drawn that in this disease the degenerative and neoplastic processes may present great variations in the individual cases, and that the degenerative processes may preponderate to such a degree that the neoplastic changes are almost wanting, or *vice versa;* thus, two varieties of the disease may be distinguished anatomically, the first almost exclusively neoplastic, lymphomatous; the other degenerative in consequence of coagulation necrosis. The fact that the micrococci found in the blood and in the affected lymphatic system in all three of the cases were alike; further, the fact that in one case the organisms were found three and a half months before death; and finally, the fact that it was possible to induce in lower animals anatomic changes resembling those of leukæmia and pseudo-leukæmia, appear to Verdelli to afford strong confirmation of the view that there is a causal relation between the organisms and the disease. As suppuration was not observed in any of the cases, and only exceptionally in the experimental investigations, it is to be concluded that the virulence of the organisms was attenuated; the pallor of the colonies, their decolorization under certain conditions, likewise indicating a diminution of chromogenetic activity. The interpretation given these cases is in harmony with Virchow's view of their pathogenetic unity, although existing knowledge will not permit the final acceptance of such a view.

## SURGERY.

UNDER THE CHARGE OF

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### WHITEHEAD'S OPERATION FOR HEMORRHOIDS FROM AN ANATOMICAL STANDPOINT.

AFTER a careful discussion of the blood-supply of the rectal region, THOMPSON (*Medical Chronicle*, August, 1893) observes that in all cases of piles that are advanced, three large pile masses come into view, especially after dilatation. The anterior mass, about half the size of the others, cor-

responds to the anterior radicles of the superior hemorrhoidal vessels, and their anastomoses with the middle hemorrhoidal and inferior vesical. The two postero-lateral masses correspond to the lateral trunks of the superior hemorrhoidal, and their anastomoses with the inferior hemorrhoidal. A proper understanding of these facts is necessary for the performance of Whitehead's operation. The anastomosis is complete; the veins have no valves; and, under ordinary circumstances, the greater part of the venous blood passes up the superior hemorrhoidal vein to the portal system, and thence through the liver. Any obstruction causes an excess of blood to flow into the middle and inferior hemorrhoidal vessels. This excess of pressure, with no adequate outlet, causes a distention in their weakest part, which is below, in the comparatively loose cellular layer, and not above, where they are supported by the dense submucous coat. The natural and inevitable consequence is chronic phlebitis, thrombosis, etc. The importance, however, of this loose connective tissue in which the pile area lies cannot be overestimated, for in Whitehead's operation it enables the rectum to be safely separated from the surrounding tissues with but trifling hemorrhage and absolutely no damage to the sphincter muscle. Whitehead's operation this author describes as follows: The patient is prepared by enemas and antiseptic precautions and thoroughly anæsthetized; the sphincter thoroughly distended, with the patient in the lithotomy position, and forceps are placed on each of the pile masses. With a blunt-pointed pair of scissors the junction of skin with mucous membrane around the anal margin is carefully divided, a few snips bringing us into the cellular interval. By passing the finger into this space, either by itself or with the aid of the scissors, the mucous membrane is easily dissected up which contains the piles. This mucous area is drawn down by the attached forceps in the form of a tube; it is then slit up the side and partly around; this cut edge is then sewn to the skin margin by silk sutures; the circular cut is then continued and then sewn again, and thus, step by step, as it is cut the mucous membrane is sewn to the skin. Twisting or tying usually suffices for the slight bleeding encountered, but sometimes the modified Staffordshire knot of Dr. Sampson, placed in the supply of the pile area, will be of service. This can be done after the dissection of the mucous membrane. The author insists upon the importance of opening at the beginning of the operation the "peri-anal" space, and believes that failure to do so will cause later more or less injury to the sphincter and incontinence. He has the utmost confidence in this operation.

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### Four Hundred and Fifty Cases of Congenital Club-foot.

Tappert (*Münch. med. Woch.*, 1893, No. 18) has in the past forty years operated upon five hundred and forty cases of talipes. He has used the subcutaneous method for the most part, cutting the tendons of the shortened muscles, usually beginning with the tibialis anticus, which he has found to be shortened in all cases of intense talipes. Then after a few days the plantar aponeurosis and the tendo Achillis, in exceptional cases the extensor hallicis tendon, and through an open wound the tibialis posticus. Then follows a plaster-of-Paris bandage—a paper splint, the shape of the plantar surface of the foot and covered with plaster being first put on, and then the

bandage carried to the knee, paper being used here also to strengthen the splint. This bandage is renewed every eight days, this period being lengthened later, the correction being gradual meanwhile. In six to eight weeks, in children one to two years old, the foot regains its normal position, then beyond the normal in excess. A fixation-splint is then employed, and is to be worn day and night. It holds the foot in the correct position when at rest, but in standing and walking exaggerates the correction. If this treatment does not suffice in some cases, the tibialis posticus must be cut. In congenital cases the author operates in the seventh to the twelfth month, but uses stretching before this.

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### The Operative Treatment of Hemorrhoids.

The papers recently published by Lang and Whitehead, in which they published simultaneously the results of an operation very similar in its character, which each, unknowingly, had performed, leads Sendler (*Centralbl. für Chir.*, 1893, No. 34) to report the operation as he has performed it for some time past, with a *résumé* of some of his cases. He performs the operation as follows: After the usual preparations, the chloroformed patient is put into the lithotomy position, the pile is drawn down, a cut made in the skin opposite to the pile mass which is then dissected up from the loose cellular tissue; it is then cut free through sound mucous membrane, the sphincter being carefully avoided, and after hæmostasis the mucous membrane is united to the sound skin. If the pile is a large one, or there are many, it would be well to proceed, step by step, and after the extirpation of each pile immediately place the sutures. His after-treatment consists in the insertion of a drainage-tube covered with iodoform gauze and an antiseptic dressing; when, by means of a simple diet and opium, the bowels are confined for five or six days and then are only slightly moved. Generally after eight days the stitches can be removed and the patient can get up. His shortest cure was four days, the longest twenty-one days, or an average of fifteen days in bed. There was very slight pain after the operation and no untoward symptoms. He lost no patients. All of his cases had been under observation for some time, and in none does he find any difference from normal in the functions of the sphincter or rectum.

He claims for the operation speed and certainty, with no granulating surfaces of any moment, and a perfect functional recovery.

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### Calculous Pyelitis with Complete Suppression of Urine for Seven Days; Relieved by Operation.

An interesting case of calculous pyelitis is reported by Cabot (*Boston Med. and Surg. Journ.*, August 31, 1893), in which the patient, a chronic sufferer from renal calculi, had anuria for seven days. The author, suspecting that the function of the right kidney had previously been destroyed and that the suppression in the other was due to reflex causes from a stone that obstructed the ureter, decided upon a median explorative laparotomy, with the chance of relieving the condition found present. The hand introduced found, as suspected, the right kidney enlarged, altered, and functionless, while no alteration could be felt in the left kidney nor the presence of a stone detected

either in the pelvis or ureter. An incision was then made in the left loin, and bimanual palpation used, but to no purpose. The wounds were closed and dressed, the patient made a good recovery from the ether, and about three hours later there was an escape of urine *per urethram*. The catheter drew off thirty-seven ounces, and in the first twenty-four hours there was passed, naturally and by catheter, two gallons. In the second twenty-four hours about five quarts passed. Then the amount gradually declined to about seventy ounces per diem. The conclusions which the author draws from this case are: "1. That in a calculous patient with a distinct attack of renal colic, the suppression of urine should be regarded as directly due to the stone, and that in the majority of cases both kidneys will be found to be disabled; for the cessation of the function of a healthy kidney, due to the irritation of a stone in the opposite ureter, must be very rare. 2. These cases should be treated by operation as soon as it is evident that the function of the kidney has come to a standstill, as there is little chance of the stone being pushed along the ureter when the kidney is no longer excreting urine behind it. 3. In the absence of any evidence as to the location of the calculus, the first step in such an operation should be a median laparotomy, with the hope of discovering the whereabouts of the calculus, in order to proceed intelligently for its removal. 4. If by this examination no calculus be found, so that further operative procedure cannot be decided upon, a steady massage of the pelves of the kidneys and of the ureters, from above downward, should be practised, in the hope of dislodging or breaking up a small calculus, if such exists." The patient's condition continued to improve after operation and a small amount of calculous material was afterward passed. Several subsequent attacks of a similar nature but not so severe were afterward recovered from, massage through the abdominal wall of the left ureter apparently assisting materially. Calculi were found after each of the subsequent attacks.

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### Aneurism of the Brachio-cephalic Trunk and the Arch of the Aorta treated by Ligation.

Le Dentu (*Bull. de l'Acad. de Méd.*, 1893, No. 8) gives an interesting case of aneurism treated by ligation after the method of Brasdor and Wardrop, with a concise *résumé* relative to their treatment. The diagnosis was made of an aneurism of the brachio-cephalic trunk about the size of a small orange. The pain and pressure symptoms became so great that it was decided to ligate the carotid and right subclavian. This operation was well borne and gave relief from pain on the right side, and also from the difficulty in breathing and the sense of oppression. The throbbing in the chest ceased slightly, but after three months became greater, and was then most noticeable in the left subclavicular region. A little over four months after the first operation he ligated the left subclavian artery. The result was good. The pain lessened, the pulsation of the aneurism grew less, and the patient could go about and attend to himself, until eight months later, when the pain again commenced, especially in the region of the right scapula; it was followed by symptoms of compression in the bronchi and larger veins, and three months later the patient died.

At the autopsy an aneurism of the aorta was found, beginning one and

three-quarters inches above the aortic valves, having transverse and vertical diameters of four and a half and four and three-quarters inches respectively. The innominate artery was included within the aneurism. There were no laminated clots found, while the ligated subclavian artery was entirely free. He believes this shows that, to produce clot-formation, the ligation must be very close to the sac. Instead of the left subclavian an enlarged artery had been tied. After a review of 261 cases, 135 of which he had had compiled lately, Le Dentu comes to the following conclusions concerning the treatment of aneurisms by the method of Brasdor and Wardrop: 1. In aneurisms of the brachio-cephalic trunk, the carotid and right subclavian should be ligated at the first sitting. If the aneurism continues to extend, without reaching the sixth vertebra, the right vertebral artery should be tied. If the tumor shows itself in the left supra-clavicular region the subclavian on that side should be ligated synchronously with the others; the left carotid should not, however, be ligated till some months after the right. 2. In primary or secondary aneurisms of the aorta, if in the ascending portion, ligate the brachio cephalic trunk as low down as possible. If the arch of the aorta is involved, ligate synchronously two large arteries, one on either side, but not the two carotids in the same sitting. All ligation is contra-indicated in aneurisms situated below the origin of the left subclavian. Internal treatment should in all cases be tried first, but operation with asepsis is much more favorable than were former operations.

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### The Treatment of Fractures of the Lower Extremities.

Within the past few years a marked change has been made in the treatment of fractures. This advanced method of treatment is remarkable for the saving of time to the patient, as well as strength, and also those evils which too often accompany long detention in bed, especially in patients of advanced years. Of this new method, Schmid (*Centralbl. für Chirurg.*, 1893, No. 32) says the progress lies in the fact that, instead of spending six weeks in bed, the patient generally remains but six days, and avoids those complications, such as bronchial catarrh and hypostatic pneumonia; while healing is quicker, as he believes, because the circulation is nearer the normal, and the pressure of the parts together stimulates the healing process. For the past five or six years this author has used this method in treating all fractures of the lower extremities, and within the last two or three years in cases of compound fractures, resections, and osteotomies.

He claims for this method no improvement in technique; its results are due to a new method of using old and well-tried means. The author uses a well-fitting plaster-of-Paris bandage that does not include the joint (unless involved) on either side of the fracture; properly placed in apposition, the fragments can be securely held in place by this means. The patient is thus enabled in the first week to stand and move about without pain or danger. As an illustration the author gives his treatment of one case of fracture of the malleoli. When such a case is seen one or two hours after the accident, the bones should be set by extension, counter-extension, and manipulation, the limb placed upon a splint in an elevated position and cold applied. In from three to six days after resorption has taken place and the swelling has

gone down, a plaster-of-Paris bandage is applied from, in this case, the toes nearly to the knee-joint, forcible extension being maintained meanwhile. The patient can the next day, with such a dressing properly applied, stand and walk. If for any reason there is any doubt about the proper adjustment of the fragments, or if there are signs of swelling or of the disappearance of former swelling, the bandage should be reapplied after eight days. A sole and heel are placed upon the plaster, or in well-to-do patients a very high tight-lacing shoe made in three parts at the top may be used. He allows his patients two crutches for two days and two canes for two days more; then they go about with one, or generally without any. If the bandage is rightly put on, fear is the only thing that has to be contended with. One of his patients rode two weeks after fracture of the malleoli, and continued to ride for three weeks longer in his plaster-of-Paris dressing. Five weeks after such a fracture he removes the bandage and begins treatment by massage, baths, douches, and active and passive motion in the ankle-joint. The patient, however, is not allowed to walk until he has a strong, tight-fitting, high-laced shoe. By this method of treatment his patients have all done well, and he has never seen deformity or complications. There has sometimes been rigidity in the joints, but under the ordinary treatment it has always been easily overcome. When a fracture is seen immediately after the accident, and no swelling or ecchymosis has taken place, the plaster-of-Paris bandage may be applied immediately, and the entire healing allowed to take place under it.

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### The Treatment of Severe Hare-lip.

Some interesting points in the technique of plastic operations for severe cases of hare-lip are given by Thomas (*Birmingham Med. Rev.*, Sept., 1893). Recognizing the fact that the cartilage which normally forms the floor of the nasal canal, is found in the side of the cleft corresponding to the ala of the nose on the same side, and is continuous with it, this author inserts the point of his scalpel, blade downward, at a point below and outside of the inferior curvature of this cartilage, and then cuts a flap which includes its lower extremity. This he turns upward and inward, and then makes two corresponding raw surfaces, one on the outer side of the base of the column, the other below and continuous with it; he then applies and sutures together the corresponding surfaces. This converts a severe case into a simple one, which is followed, at a second sitting, by the ordinary operation for hare-lip.

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### The Conservative Treatment of Hemorrhoids.

P. Reclus (*Gaz. des Hôpitaux*, 1893, No. 35) treats painful hemorrhoids by sitz baths and washings with water at a temperature of about 120°–130°, and believes that their worth is far greater than that of cold baths. Before and after defecation the patient should insert into the anus cotton tampons soaked in a 2 per cent. cocaine solution. As the first operative procedure he recommends dilatation, but not the digital, but by means of Trélat's two-bladed speculum. General narcosis is unnecessary. A tampon soaked in a 2 per cent. cocaine solution is placed in the ampulla recti for three or four minutes; then he injects into the sphincter ani itself in different places 1

hypodermic syringeful, ʒj, of a one per cent. cocaine solution, which produces full anæsthesia in a few minutes. The speculum is then introduced and opened to the maximum. The author has used this method in sixty cases, with but one troublesome case. All the other cases were permanently cured. Incontinence never followed, and in only one case was there relapse. In such cases an operation is the only recourse, either with the knife or scissors. This can be accomplished with local anæsthesia from cocaine. The author had operated with success in thirty cases in this manner, and in only one was there complication, a secondary hemorrhage, which was easily controlled by a deep stitch. He believes that the extirpation should be the last resort, and that the other methods should be used in the order described.

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### The Treatment of Perforated Gastric Ulcer.

Barling (*Birmingham Med. Review*, Sept., 1893) reports three cases of perforation and peritonitis from gastric ulcer. The first case was latent; there was perforation, acute peritonitis, abdominal section, and drainage, followed in twenty-four hours by death. The autopsy showed a circular perforation one inch in diameter, situated on the anterior wall of the stomach. The second case was accompanied by acute peritonitis; the perforation was found and sutured, the cavity drained, but the patient died thirty hours after operation. The autopsy showed peritonitis, with a purulent thin fluid in the peritoneal cavity. The perforation was on the anterior surface of the stomach; it was closed by the sutures, and adhesion had taken place between the opposed peritoneal surfaces. In the third case, operation was delayed until three weeks after the first acute symptoms; these had subsided after medical treatment, but became exacerbated, through recourse to feeding by the mouth, the rectum having become irritated. The symptoms were pain in the left hypochondrium and lumbar regions; there was also present tenderness and impaired resonance. It was decided to open the abdomen, and drain this supposed abscess due to leakage from a gastric perforation.

The operation was successful, and the patient, though in a very weak and collapsed condition at the time of operation, continued to improve, and recovered entirely. The author believes that these cases show that operative interference is needed in such cases; the mortality is so great in all cases of perforation that he feels that any chance can be justifiably taken, and patients saved may be considered as saved from almost certain death. He says their best chance lies in early diagnosis and early operation. This should consist of laparotomy, the line of incision being the median above the umbilicus; suture by Lembert's method, if possible; and thorough drainage both from the seat of perforation and from the bottom of the pelvic cavity; with restricted rectal feeding and opiates.

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### Two Cases of Congenital Fistulæ in the Neck.

The supposedly rare occurrence of these fistulæ leads Schlange (*Arch. für klin. Chirurg.*, 1893, Band xlvi., Heft 2), to report two interesting cases, one of lateral and the other of median fistula of the neck. The external opening of the lateral fistula lay in the lower third of the neck between the

trachea and the sterno-cleido-mastoid muscle; the internal opening was in the neighborhood of the tonsil. Its removal was easy and the healing prompt. The histological characteristics were noteworthy: a cylindrical epithelium upon a lymphadenoid basement structure surrounded by longitudinal muscular fibres; and in the lymphadenoid tissue were glands similar to those in the intestinal mucous membrane. The second case is one of median fistula. These, as a rule, are more difficult to cure; their course is toward the hyoid bone, where they appear to mingle with and terminate in the periosteum. This, however, is not the case; they either pass around or through the bone and terminate in the mouth. This was the case as reported. Following up the fistulous tract, the author came upon a tumor, closely adherent and joined to the periosteum of the hyoid, about the size of a cherry. He resected the bone and found closely united to the other side another tumor similar in size, and extending from this a fistula emptying into the pharynx at the base of the tongue. The tumors had the appearance of fibromata, and on microscopical examination were found to be fibrous in structure, hollow, and lined with a pavement epithelium. The author believes that the resection of the hyoid bone does no harm—he has seen none; and that this radical form of treatment is the only one for this class of fistulæ.

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### The Operative Treatment of Flat-foot.

Gleich (*Arch. für klin. Chirurg.*, 1893, Band xlvi., Heft 2) bases his procedure on pathological and anatomical grounds in the treatment of this annoying condition. In all other methods he has seen relapse and the recurrence of all symptoms. For the permanent correction there must be a greater angle between the axis of the calcaneus and the plantar surface of the foot than in this condition where it is all but obliterated. To produce this result the author operates as follows: An incision is made similar to that for Pirogoff's amputation, followed by a tenotomy of the tendo Achillis. From the calcaneus is then resected, in a diagonal plane from above downward and behind forward, a wedge having its base downward and measuring about half an inch in its thickest part. If the remaining cut surfaces of the calcaneus are now applied to each other, it will be seen that the angle has been decreased between the axis of the bone and the plantar plane, and that the foot has been raised about three-eighths of an inch.

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### The Resection of the Kidney.

An interesting article is added to the study of kidney operations by the experimental operations in nephrectomy and the reporting of three successful cases as described by Kümmell (*Arch. für klin. Chirurg.*, 1893, Band xlvi., Heft 2). A long series of experiments which this author conducted, together with those already reported by other experimenters, led him to conclude that it is possible to excise large portions of the kidney without interfering in any way with its function, and that it is not necessary, in partial change or disease of this organ, to remove it entirely, but that it may be resected with good results. He reports three of his own cases, and after a *résumé* of cases extant in literature, concludes that we may say of the human kidney

that partial nephrectomy is possible; and not only that, but that nephrectomy of the one kidney and partial nephrectomy of its fellow are possible without destroying the function. It is never possible to say that only one kidney is diseased, and it is better to remove only the diseased portion of one rather than the entire organ, and perchance leave the entire function to the performance of a diseased and weakened fellow.

In none of the operations reported was there any extravasation of urine through the wound, or was there any urinary fistula created. This was probably due to the fact that the pelvis of the kidney was not opened. The wounding of the pelvis should always be avoided, as it tends to extravasation and creation of fistula, which must finally result in nephrectomy. If it be necessary to enter this cavity it should be done through the kidney substance. Hemorrhage during these operations may be severe. It can usually be checked during the operation by pressure upon the kidney itself. If this, however, does not suffice, a deep stitch, unless it cuts through, will check it. If it does not, the kidney should be sewed into the wound and packed with iodoform gauze. The incision in the kidney should, when possible, be wedge-shaped and transverse rather than longitudinal. When possible the direction of the vessels should be taken into consideration. A partial nephrectomy rather than nephrectomy is indicated in lesions from benign tumors and those that are localized, while he especially recommends it in all pyonephritic processes where the removal of the diseased portions leaves the kidney in a condition easily recovered from. In some cases this is not possible and nephrectomy becomes a necessity, while in others the parenchymatous inflammation has produced such adhesions that a partial nephrectomy is easier and more serviceable than a total one.

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### The Treatment of Burns.

Faytt (*Gazeta Lekarska*, 1893, No. 6; *Centralbl. für Chir.*, 1893, No. 36) recommends the use of dressings wet in aqua Goulardi, sublimate, or solutions of salicylic acid, until the epidermis or the necrotic tissue is removed. As soon as the wound begins to granulate he covers it entirely with silk protective; the pieces must not either project over the edge of the wound or lap over each other. Over all is then placed an ordinary antiseptic dressing. His theory for the results obtained by this dressing is, that the secretions pass easily along the silk to the edge of the wound and are quickly absorbed by the dressing, which does not lie upon the wound surface, and can accordingly be left undisturbed for longer periods. The pain and tendency to contracture of the scar, he claims, are minimized by this method.

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### The Pathogenesis of Death from Burns.

Koch (*Wiener med. Wochenschr.*, 1893, No. 17) in a series of researches on 32 cases of severe burns, of which 16 patients died, confirms the already reported observation of Tappeiner, that there is a loss of blood plasma. This author found in the cases of death that the specific gravity was between 1065 and 1076, and he concludes from this that in contradistinction to the normal, the blood in cases of severe burns easily loses its plasma. This loss is not a true decrease of plasma, but is caused by the change in the red blood-cor-

puscles and the toxic substances arising therefrom. This change is not seen or does not arise in the neighborhood of the scab, but at the point where the blood, warmed to from 40°–60° C., becomes functionless. He believes it is worth while to use intravenous injections of normal salt solution in these cases.

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### The Bromide of Ethyl as a General Anæsthetic.

In an interesting historical and physiological discussion of this subject, with the report of about 500 cases in which it was employed, either alone or combined with chloroform, Hartmann and Bourbon (*Rev. de Chir.*, Sept., 1893, No. 9) come to the following conclusions: It is of the greatest importance that a pure bromide of ethyl be employed; especial care should be taken that the bromide of ethylene is not substituted by mistake for it. This has caused accidents that have been attributed to the bromide of ethyl, and is dangerous for the patient. The bromide of ethyl, employed as it should be, is a most convenient, most rapid, and the least dangerous anæsthetic. The recovery is prompt and is not followed by malaise. It produces a congestion of the cerebrum, and consequently can be administered in a sitting position, and is thus employed by laryngologists. It is, however, harmless only in short operations, and can therefore only be used in such. For longer operations it is necessary to resort to mixed narcosis, the bromide of ethyl being used at first, and then chloroform; this shortens the first stage, but does not exclude the danger of syncope. It has the disadvantage in some cases of making the patient's breath smell for a day or two of garlic, but of this he is not conscious.

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### Hernia in the Obturator Foramen.

A case of complete incarcerated obturator hernia containing the tubes and ovaries is reported by v. Roguer-Gusenthal (*Wiener med. Presse*, June, 1893, No. 26) as follows: This is the fourth case reported in which the female generative organs have formed a part of the hernial contents. The slow formation of the hernia and the deepening of the obturator foramen are characteristic. The predisposing cause was a fall twenty-six years previously; the exciting cause was the patient's age and the relaxation due to loss of fat. The prolonged symptoms of the incarceration are of interest, and show that there was a constant tendency toward strangulation. The tumor was not clearly seen until the time of operation. It was soft, elastic, and fluctuating, and lay further inward and below than a crural hernia. The tumor was sensitive to pressure. There was but slight swelling of the abdomen, and no fever. The intestine was in the foramen, and became rapidly gangrenous. The laparotomy would, if the patient's condition had been better, have produced better results. It was, however, attended with many difficulties, but the Trendelenburg position aided in a marked degree. This allowed the examination of the obturator foramen, but in the case of such a gangrenous hernia the formation of an anus præternaturalis would probably yield better chances.

# DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

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## Resection of the Nose for Removal of Polypi.

Dr. Albert Panné, of Nevers, reports (*Archives Internat. de Laryngologie, etc.*, 1893, t. vi. No. 4) an instance in which he found it necessary to make a resection of the nose and keep the parts temporarily ununited for three months in order to relieve a patient from mucous nasal polypi.

A young man, nineteen years of age, began at fifteen to have temporary difficulty in respiration and repeated coryzas, being compelled to breathe through the mouth at night, and eventually day and night. Within two years his nose became deformed, enlarged, and flattened. At the end of the third year he consulted a physician, who detected numerous polypi, numbers of which, or fragments of which, he extracted with forceps once a week during four months. Post-operative hemorrhages were profuse and debilitating; and the nose remained obstructed while the deformity increased, so that finally both patient and physician ceased their efforts for relief. Several months latter he consulted Dr. Panné, who removed many enormous polypi and fragments of polypi with forceps for three weeks without material benefit; the patient becoming so discouraged as to threaten to commit suicide. A radical operation was then attempted. The nose was separated from the face on the left side and thrown over the right cheek. Numerous polypi were extracted with forceps, and the parts were then curetted and cauterized with thermic and electric cauteries. The parts were replaced, but prevented from reuniting by the intervention of strips of gauze between the raw surfaces. Four subsequent operations by curetting and cauterization were necessary at intervals of a few days before the nasal fossæ were sufficiently free to justify definitive suturing of the nose into position, which was done on the twenty-first day after the resection. Three months later there had been no evidence of recurrence, so that the hope was entertained that all danger of recurrence had passed.

## Suppuration in the Frontal Sinus.

Dr. Luc reports (*Archives Internat. de Laryngologie*, 1893, t. vi. No. 4) a case of latent empyema of the right frontal sinus of a lady, fifty-four years of age, in which the cause was not apparent, and in which incomplete cure followed trephining the frontal sinus and curetting the suppurating surfaces. The suppuration, of six years' duration, and said to have immediately followed a coryza from cold, had been incorrectly referred to the maxillary sinus, which had been opened to no purpose after sacrifice of a second molar tooth.

After some months of ineffective topical treatment in the nose, it was determined to trephine the frontal sinus, although there was no direct symptom of its implication. In fact, the only symptoms of disease, other than the presence of the pus in the nasal passage, were loss of appetite for solid food in consequence of a slight septic influence, and a veiled appearance of objects when viewed solely by the eye on the affected side. As soon as the sinus was opened there was escape of pus mixed with blood. Curettage was performed, and drainage established by the introduction of a perforated rubber tube, the two extremities of which, one protruding from the nose and the other from the wound, were attached together with a thread. The drain was withdrawn at the end of three weeks, and the wound became closed over night. The ocular troubles disappeared almost completely, and the appetite became restored, but there remained some discharge necessitating daily antiseptic douching.

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### Anatomy of the Nasal Septum.

Dr. Paul Rauge describes (*Archives Internat. de Laryngologie, etc.*, 1893, t. vi., No. 4) the macroscopic anatomy of Jacobson's organ in the ox and the sheep. It is rudimentary and often difficult to detect in man, but comparative anatomy throws some little light upon its structure and function.

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### Scalds of the Throat and Larynx in Children.

In the first portion of an address on "The Surgery of the Air-passages and Thorax in Children," delivered at the Royal College of Surgeons of England (*The Lancet*, 1893, vol. ii., No. 11), Mr. Bernard Pitts first discusses the two chief clinical features of scalds of the throat and larynx—namely, causation and treatment.

Of 78 cases admitted to St. Thomas's Hospital (1872–1893) the average age was a fraction over three years. The cause in 67 of them was inhaling steam, or attempting to drink boiling water from the spout of a kettle; in 4, "drinking from teapot spout;" in 1 each, "drinking hot cocoa," "hot potato in mouth," "hot tallow," and "pepper forced into the throat"—the latter, as remarked, not strictly a scald; while in 3 cases the cause was not stated.

There were 15 deaths, in 12 of which tracheotomy had been performed, intubation having been performed first in 3 of them; 8 cases recovered after tracheotomy, and 3 after intubation, neither of which operations was performed in cases that did not seem likely to provefatal. Only one case recovered after intubation followed by tracheotomy.

Brief records are given of 12 cases which died after tracheotomy, of 8 cases which recovered after tracheotomy, and of 3 cases which recovered after intubation.

Mr. Pitts refers to some cases at the Wolverhampton General Hospital.

In view of recent reintroductions of practice it is interesting to note a reference by Mr. Pitts to a paper read before the Royal Medical and Chirurgical Society by Dr. Marshall Hall, on April 3, 1821, in which that gentleman regrets that he did not scarify the epiglottis and glottis in his cases, and concludes thus: "I have also conjectured that it might be possible to relieve

symptoms by introducing a tube into the larynx, an expedient peculiarly adapted to a case which time would cure, and in which the cause of irritation would not be materially aggravated."

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### Gunshot Wound of the Larynx.

The case is reported by Dr. A. Sokolowski, of Warsaw (*Archives Internat. de Laryngologie, etc.*, 1893, t. vi. No. 4). A man, forty-seven years of age, was shot in the left cervical region from a distance of some fifteen paces. There was at once violent cough and expectoration of considerable sanguinolent mucus. Deglutition was almost impossible, and there was a distinct sensation indicative of lodgment of the ball in the larynx. The voice became husky, and this huskiness increased to complete aphonia in a few hours. On his arrival at the hospital Dr. Kijewski noticed a small wound over the central portion of the left wing of the thyroid cartilage, the skin around being bruised and discolored by the powder. The left side of the larynx and of the corresponding cervical region were tumefied. Aërial crepitation was noted on palpation at the anterior and lateral portion of the neck and below the clavicle. Respiration was free. A few hours later the patient ejected the missile in a violent paroxysm of cough. It was a revolver ball 1½ centimetres in length and 5 millimetres in diameter. Deglutition immediately became much easier, but the hoarseness remained.

Sokolowski saw the case three days later, the patient being still very hoarse. The left arytenoid, the left aryepiglottic ligament, and nearly the whole posterior wall of the larynx were tumefied, red, and the vocal band was absolutely immobile on inspiration. The left ventricular band was congested and thickened, as was the corresponding vocal band, which at the anterior and inferior portion of its free border exhibited an exulceration 2–3 mm. in length and 1 mm. in diameter, covered with a whitish pellicle. The right side of the larynx and the epiglottis were normal.

The ball had, therefore, transversed the larynx and had remained imbedded in the soft tissues for a few hours. Recovery was prompt and satisfactory.

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### Traction of the Tongue as a Curative Agent in Nervous Aphonia.

Dr. C. M. Desvernine, of Havana, in an article (*Annales des Maladies de l'Oreille, du Larynx, etc.*, 1893, t. xix., No. 8) on the influence of lingual traction in certain cases of nervous aphonia, reviews the psychical treatment and gymnastic training employed in this affection, which is largely hysterical in character, whether in males or in females, and reports two recent instances of the utility of such traction in his own practice.

He contends that the distention of the lingual muscles does not act psychically but physiologically, exciting the central nuclei which preside over phonation, and which are probably in a state of dynamic incapacity from which they are aroused by double influence—encephalic and peripheric.

# OPHTHALMOLOGY.

UNDER THE CHARGE OF

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## A New Method of Canthoplasty.

To avoid the danger of reunion of the divided lids after this operation, KENNETH SCOTT (*Ophthalmic Review*, vol. xii., No. 144), after dividing the canthus in the usual way, introduces a spring speculum and dissects up the portion of the conjunctiva opposite the centre of the wound from its attachment over the globe, almost as far as the corneal margin. The free edge of the conjunctival flap is then attached by a fine silk suture in the usual manner to the apex of the skin wound, when it will be found that there is no tendency toward dragging. The speculum is then removed and the conjunctival edge sewn in turn to the opposing cut margins of the upper and lower lids.

A silver wire suture, which has been thoroughly softened in the flame of a spirit lamp, is then passed right through the substance of the upper lid from the skin to its conjunctival surface near to its ciliary margin and a short distance from the cut surface of the canthus. It is fastened by twisting lightly so as to avoid constricting the tissues. The needle end of the suture is then passed through the substance of the eyebrow directly over the outer third of the lid, and is fastened by twisting to the other free end brought up to meet it. The lower palpebral part of this strand of silver wire is then curved outward so as to evert the outer end of the new lid margin and prevent all possibility of its approximating the opposing cut edge of the lower eyelid.

The operation is done with antiseptic precautions under cocaine, except in the cases of children, when a general anæsthetic is usually required. The suture should not be removed until the wound between the skin and conjunctiva is quite healed, usually about the fourth day.

## Calomel Conjunctivitis.

DRS. HARRY FRIEDENWALD and A. C. CRAWFORD (*American Journal of Ophthalmology*, vol. x., No. 8) report three cases of this affection, with observations on an inflammation identical with it in character, produced experimentally upon rabbits. The symptoms consist of œdema of the lids and conjunctiva, injection of the vessels, profuse lacrymation, mucous or even purulent discharge, and the frequent formation of a diphtheritic membrane. The inflammation differs from the ordinary acute conjunctivitis in being

sharply limited to one part of the membrane, usually the lower part of the ocular conjunctiva and that lining the lower lid. The cornea is not involved, unless the inflammation be very intense.

The affection is produced by the placing of calomel or of other mercurous compounds in the conjunctiva, while potassium iodide is being taken internally in sufficient quantity to be eliminated by the tears. It is not necessary that the iodide should be taken by the mouth, since the same effect has been produced where it was used by inunction or administered hypodermatically. Other preparations containing iodine in sufficient quantity will produce a similar effect.

It has been demonstrated that calomel in the presence of the animal fluids containing sodium chloride is very slowly changed into the bichloride and free mercury. It has also been demonstrated that potassium iodide is excreted in the tears, though not so freely as by the urine and saliva.

In a solution containing potassium iodide, both the chlorides of mercury undergo decomposition, forming compounds which act upon the conjunctiva as caustics.

The discoloration due to decomposition of the flakes of calomel in the conjunctival sac preceding the onset of inflammatory symptoms is noted in the experiments made on a rabbit, and has also been observed in the human eye by other observers. After the use of five-drachm doses of potassium iodide twice daily, it can constantly be detected in the tears by the chloride test; but a very much smaller quantity may give rise to conjunctivitis, irritation being caused by the insufflation of calomel twenty hours after the use of the iodide in half-drachm doses. The use of bromides will produce a similar effect.

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### Eye Symptoms of Cerebro-spinal Meningitis.

Dr. R. L. Randolph (*Bulletin of the Johns Hopkins Hospital*, vol. iv., No. 32) reports upon a clinical study of forty cases of cerebro-spinal meningitis with reference to the eye symptoms. Probably every case of this disease shows some involvement of the eye. Conjunctivitis and photophobia; contracted, dilated, or unequal pupils; strabismus; pus in the anterior chamber, and keratitis are common. Sometimes suppurative chorioiditis and pan-ophthalmitis occur. In the epidemic in question as studied by Randolph, the principal lesions were only revealed upon ophthalmoscopic examination. In six cases there was optic neuritis, in one retinitis, in another thrombosis of the central vein of the retina, and in nineteen cases there was great engorgement and tortuosity of the retinal veins, which were also very dark in color.

In some of the cases that exhibited no lesions of the fundus of the eye, it was probable that such lesions appeared at a later stage of the disease. Of three cases, which when examined, presented no eye symptoms, two recovered, and in the other lesions probably developed later. In eight cases there was strabismus, all divergent; and in all cases it was the right eye which diverged. In several other cases the right eye seemed to be most severely affected. No explanation to account for this greater liability to disease of the right eye is offered, although the fact has been noted by other observers.

It would seem that all epidemics of cerebro-spinal meningitis have one or

more eye symptoms in common, conjuntivitis and pupillary changes being most frequently met with; but in every considerable epidemic there is apt to appear a special type of the eye affections. Thus, certain observers have noticed suppurative inflammation of the uveal tract; others have seen keratitis; still others only conjunctivitis; while in this epidemic the lesions of the retina and nerve predominated. The latter lesions have probably the most important significance as bearing upon the prognosis, which becomes unfavorable in proportion as they appear early and are strongly pronounced.

It is clear that in all epidemics of cerebro-spinal meningitis a systematic examination of the eyes should be made with the ophthalmoscope. The existence of good vision does not mean a sound optic nerve or retina. Frequently with a high grade of neuritis the visual disturbances are insignificant. It is surprising to what a stage disease of the chorioid, retina, or optic nerve can advance without causing any subjective symptoms whatever, or any symptoms of which the patient will be conscious in the presence of the great physical suffering of this disease. Of the thirty-six cases Randolph examined ophthalmoscopically but three complained of their inability to see distinctly.

Where death does not ensue, optic neuritis is apt to be followed by atrophy and blindness that is usually permanent, although in one case he had seen it was stated that the subsequent recovery was complete.

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## OBSTETRICS.

UNDER THE CHARGE OF

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### A Case of the Porro Operation with a New After-treatment.

SEELIGMANN (*Centralblatt für Gynäk.*, 1893, No. 28) reports a case in which Porro's operation was done upon a patient with osteomalacia. He performed Cæsarean section for the delivery of the child, which was then in the thirty-fourth week of gestation, at the same time removing the uterus and ovaries, with success for mother and child. Five days later he began his new after-treatment. The pelvis was much deformed; the pubic arch was compressed and twisted; the promontory of the sacrum far advanced into the pelvis; symphysis beak-shaped; conj. diam., 8 cm. There was a history of tuberculosis on the maternal side of the patient's family. The apparatus used in the after-treatment was one of extension and counter-extension, known as

Volkmann's sleigh-harness apparatus. The weights were used after the apparatus had been on eight weeks, no pain being caused by them or by the forcible extension. Measurements taken before the apparatus was applied were as follows:

| | |
|---|---|
| Total length, from head to the soles of the feet | 125 cm. |
| From left trochanter to skull | 36 " |
| " right " " " | 36 " |
| " left " " foot sole | 89 " |
| " right " " " " | 84 " |
| Weights applied to the left under extremity | 9½ lbs. |
| " " " " right " " | 11½ " |
| " " under arms | 11½ " |

After the weights were on, a measurement showed that the woman had gained 18 cm. in length, and the two lower extremities were equally long. The swelling of the joints had disappeared. The patient was allowed to stand, and little shortening was observed. The pelvic deformity lessened, and the kypho-scoliosis largely disappeared, so that now after seven years of helplessness and great pain the patient is restored to health and comfort.

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### Lysol as an Antiseptic Agent in Obstetric Practice.

Rossa (*Wiener klinische Wochenschrift*, 1893, No. 24) records the results after six months' use of lysol as an antiseptic agent, in the clinic of Rokitansky. Lysol is an antiseptic agent of great power, and with water, in the strength of 1 per cent. and upward, forms a milky fluid of a tar-like odor. It will not, except in very strong solutions, affect the hands, like carbolic acid or sublimate solution, the latter, as is known, often producing severe eczema. It is also freely soluble in water, in which it has the advantage of carbolic acid; in its solubility the danger of toxic effects is decreased. In solutions of the strength of 1 per cent. it forms a valuable disinfectant for instruments, the external genitals, and the hands, on the latter producing much the same soap-like feeling that creolin does. For vaginal injections he generally uses it in the strength of 2 per cent. Under the strength of 1 per cent. it quickly becomes useless as a disinfecting agent. Rubber drainage-tubes and catheters should not be left too long in solutions of lysol, as they become roughened by contact with it. In gynecological practice the results of its use have been good; but in applications within the bladder, even in as weak solution as ½ of 1 per cent., lysol has produced cystitis.

Lysol, however, is not without toxic effects, as has been shown by Remouchamps, Sugg, and Gulach, and several cases of poisoning from it are recorded. The writer closes his interesting article by a number of statistics showing a decreased death-rate, and an increase in the number of cases free from fever, following the use of lysol.*

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### Rupture of the Vaginal Arch during Labor.

Schick (*Prager medicinische Wochenschrift*, 1893, No. 29, p. 355) reports the case of a laboring woman, aged thirty-six, a II-para, who gave a history

of perforation of the fœtal skull and forceps delivery in her first labor. The patient was of slight build, with some osseous deformity and an overhanging abdomen. Pelvic measurements: Crests 27 cm., sp. il. 24 cm., troch. 29 cm., diam. Baud. 17.5 cm., conj. diag. 11 cm. The head was in the first position, vagina wide and smooth, os contracted, bladder distended. During several hours the head remained stationary; at the end of this time forceps was applied, and the head delivered after several strong tractions. Uterus did not remain contracted until some time after delivery. As the placenta did not appear and the patient seemed much prostrated, a hand, guided by the cord, was passed into the vagina. It was found on examination that a large rent opening into the abdominal cavity existed in the upper anterior vaginal wall, and through this tear the placenta had disappeared. Laparotomy was performed as collapse seemed imminent, and supra-vaginal amputation of the uterus done. The abdominal cavity was found full of clots and fluid blood. The uterine stump was treated with a cautery and was secured by two needles. Silk sutures were used. The patient finally recovered.

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### Dermoid Cyst of the Ovary as a Hindrance to Birth.

Fischer (*Prager med. Wochenschr.*, 1893, p. 285) reports the case of a woman, aged thirty-seven, a IV-para, in whom a tumor of a long oval shape, two fingers' breadth below the xiphoid cartilage, was found. Patient was in labor at the time of observation. It was noticed that under uterine contractions the lower uterine segment was tense, and the contraction ring on a level with the umbilicus. External genital organs and pelvic diameters were normal in every way. The retro-vaginal arch was thrown forward by a round, smooth, elastic tumor; fluctuation indistinct. The os was high up and in a state of contraction; bladder much distended. No fœtal heart-sounds could be made out. The tumor was punctured with a Pravaz syringe, bringing away a curdy fluid and hair. Cæsarean section was then performed with good result. Discharged on tenth day cured. Two months later the patient again presented herself, giving an account of much pain in the lower abdomen, with swelling. Examination revealed a much-enlarged uterus, fixed by adhesions, and from its right side a tumor as large as a child's head extending from the vagina to the kidney and colon. This tumor appeared firmly adherent.

The abdomen was opened, and a large, generally adherent pus cavity containing hair was found. The uterus was firmly adherent. The patient made a good recovery, except that a long sinus extending to the kidney required further treatment, which, however, was successful.

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### Complete Inversion of the Uterus.

Péraire (*Annales de Gynécol. et Obstétr.*, 1893, tome xl. p. 94) reports a case of complete inversion of the uterus, with prolapse, consecutive to delivery. The inversion was immediately followed by dangerous hemorrhage. Patient was in a state of extreme collapse. Reduction was effected by means of taxis, preceded and followed by the most rigorous antiseptic precautions. The labor had been quite normal until the placenta and uterus were extruded together. The patient finally recovered.

### A Case of Conservative Cæsarean Operation.

Doktor (*Centralblatt für Gynäk.*, 1893, No. 27) reports an interesting case in which the Cæsarean operation was done on a primipara, thirty-two years old, of undeveloped appearance. The height of the patient was 132 cm., her deformity consisting in an angular lumbo-sacral kyphosis at the fifth lumbar vertebra. Sacrum convex posteriorly. The transverse outlet was also much narrowed, two fingers being unable to find entrance between the ischia. The abdomen was opened when labor began. The uterus was brought out through the abdominal wound, an assistant grasping the uterine neck so as to compress it and hold it upright. The incision was made from the fundus to the neck, through the placenta, and the child quickly extracted. Severe hemorrhage was encountered from the placental site. The uterus was closed by silk sutures passed through its entire thickness about ¾ cm. apart, the abdominal sutures being of silkworm-gut. The strictest asepsis was maintained. Before the operation two injections of ergotine were employed, yet even with this and the manipulations, no active contraction of the uterus was observed; the retraction, however, was satisfactory, and the volume reduced to that of a recently delivered uterus. The total hemorrhage was not more than is found in the ordinary labor.

Recovery was prompt; little lochial discharge was present. The writer draws attention to the following points:

1. The operation was done at a most convenient time.
2. To arrest bleeding no elastic band was used, and no compression with the fingers.
3. The wound was closed with the simplest sutures. The arrest of hemorrhage must have been from uterine contraction.
4. Absolute asepsis.

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### A Method of Reduction of the Completely Retroverted Gravid Uterus by the Application of a Pessary.

Levrat (*Le Mercredi Médical*, No. 30, 1893) describes a method for the replacement of the gravid uterus by manual means, the operation being that used for several years by Laroyenne. The manipulation consists in passing the hand between the uterus and promontory, avoiding all pressure upon the former, this being most easily done by following the lateral wall of the pelvis to the sacro-vertebral angle. When the hand has arrived here, the uterus is generally found partially enucleated from the promontory, but often the reduction is incomplete. The first stage having been successfully accomplished, the second consists in placing in position an appropriate pessary. This should have the form of a Hodge ring, with the posterior arc very large and of such a shape as not to press on any one point of the uterus. The arc should occupy the gutter made by the hand of the operator, between the uterus and sacrum. In these conditions, after a lapse of twenty-four hours or so, the reduction is complete. Two symptoms indicate complete restitution of the uterus, namely, cessation of the retention of urine and the restoration of the utero-placental souffle. The pessary may be withdrawn after four or five days from the time of the restitution of the uterus. The operation may require anæsthesia.

### Bringing Down the Foot in Breech Presentations.

Bonnaire, in a lecture on the above subject (*La Semaine Médicale*, 1893, No. 50), says: Cazeau observes in such cases that the great difficulty may be considered as being that a straight inflexible mass must pass through a curved canal little longer than itself (30 to 35 cm. against that of child, 20 cm.). Under favorable conditions of breech presentations with relaxed perineum, a very small child, or when the fœtus is macerated, the delivery is easy; but when the opposite obtains, the birth is one of dystocia. In such cases it is useless to worry with fillets or hooks, but remove the rigidity by taking from the fœtal body its props—the legs. To do this one should draw down the anterior—the easier of access—and allow the other to glide across the belly. The body then regains its suppleness. The movement of extraction can be performed above the superior strait even, by compressing the leg, bending it on the thigh, extending the whole, and finally obtaining complete lowering of the foot. Once the leg and foot are lowered in the inferior segment of the uterus and vagina, the vertebral column of the infant ceases to be bridled laterally. The author would distinguish, besides the above manœuvre, a partial drawing down of the turned-up member—simply flexing the leg on the thigh. In the above methods prolapse of the cord must be borne in mind. Bringing down both feet is possible only if the presentation is above the pelvic excavation, or partially beyond and without the inferior strait. The manœuvre ought to be only used during labor, provided the cervix be sufficiently dilated to let in three fingers of the examining hand. The integrity of the bag of waters constitutes a contra-indication in the interests of the child. This method should not be used before the eighth month of pregnancy, or if the child be dead. It is also useless in cases in which great relaxation of the pelvic floor exists. Bringing down one foot risks less a prolapse of the cord, and is easier to perform.

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### Puerperal Aphasia.

Carre (*Archives de Tocologie et de Gynécologie*, 1893, vol. xx., No. 7) reports four cases of puerperal aphasia.

In the first the patient presented a cardiac trouble, which developed during her second confinement, and perhaps contemporary with a phlebitis following her first labor. Under the influence of lively emotion, a clot from the heart entered the Sylvian artery and temporarily cut off the blood-supply. The embolism gradually disappeared and the centres recovered their functions, cerebral paresis remaining.

In the second case there was marked manifestation of embolism limited to the left hemisphere, and due to impoverishment of the blood. In this case, two weeks after confinement, the lochia and milk suddenly ceased. Thirty-six hours later complete aphasia set in, the only words which the patient could speak being "yes" and "no." Profound coma, succeeded by fever, and convulsions of the right side. These symptoms soon disappeared.

Case III. was a primipara with a normal delivery. Nineteen days after parturition she developed headache and otorrhœa, accompanied by fever and photophobia. There was aphasia of reception and transmission. These

symptoms disappeared gradually, but five months after the onset the patient still has observable weakness of memory and intelligence. The aphasia was due to thrombosis, favored by the puerperal state and provoked by inflammatory lesions of the middle ear.

In the fourth case, eight days after delivery there appeared right hemiplegia, with aphasia and inability to protrude the tongue. Temperature normal. Intelligence seemed to be preserved. No abdominal or cardiac complications. Six weeks after confinement death occurred. In this case labor had been easy, but lactation had been excessive; and in the absence of cardiac or rheumatic symptoms, the cerebral accidents are to be attributed rather to thrombosis than embolism.

In all there are sixteen cases of aphasia reported, and of these three proved fatal. In certain cases the aphasia may be nervous in origin, neuropathic, or hysterical. In other cases it depends on albuminuria or uræmia. In nearly one-half the cases it coexists with right hemiplegia, and depends on thrombosis or embolism.

Having occurred in one pregnancy, it is liable to re-occur in the next. It usually appears about the first week after delivery.

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### A Case of Puerperal Bone softening Cured by Castration.

Harajewicz (*Wiener medizinische Presse*, 1893, No. 27) reports an interesting case of successful removal of the ovaries for the cure of puerperal bone-softening. The patient had had ten children, and was in her eleventh pregnancy when she began to have severe pains in the loins, back, and hips. Her twelfth pregnancy was attended by more severe and continuous suffering; all the bones of the body except the face became acutely tender, and coughing caused intense pain. No visceral disease could be found; the urine was normal. The deformity of the pelvis and skeleton generally was now marked; there was no ovarian tenderness, and no uterine disease. The operation was performed under strict antiseptic precautions; both ovaries were removed and found to be normal. Complete and permanent relief from pain at once ensued, and after three months the patient left for her home. The bones were hardened, but crooked. Should this condition develop during pregnancy, it is probably best to empty the uterus; and, if it continue, castration may follow, or a Cæsarean section may be made at once, the ovaries being removed at the same time.

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### Two Epidemics of Afebrile Icterus Neonatorum with Hæmoglobinuria (Winckel's Disease).

Wolczynski (*Internationale klinische Rundschau*, 1893, No. 28) reports the results of his experiences in two epidemics of the above. Numerous post-mortem examinations revealed subpleural extravasations in the lung parenchyma, with thrombi in the vessels. The same condition was to be found in the liver and spleen, the former being in a state of fatty degeneration. In all these thrombic masses, or in effused blood, the characteristic bacilli were to be found. The kidney was the seat of a subcapsular extravasation; pigment masses and rods were also present. Cultures made from the above in living animals were followed by death in from twelve to seventy-two

hours. In the urine were found Teichmann's crystals, red corpuscles, coloring matter, and bile pigment.

The writer believes the disease to be the result of the introduction into the child's system of the bacterium coli communis; the mode of introduction in this instance was probably by washing the children's mouths with water from foul sources. The bacterium was found in the water of the well used, and the substitution of sterilized borated water was followed by a cessation of cases.

In 1892 six children were attacked with the disease, and all died.

In 1893 the same number had the disease, with a mortality of five. The other case recovered.

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### Bacteria in Human Milk.

Ringel (*Münchener medicinische Wochenschrift*, 1893, No. 27) contributes the report of a series of investigations upon the bacteria found in human milk. Various observers had reported having found the staphylococcus aureus and albus, as well as the streptococcus, both in healthy milk and in that from mothers suffering from puerperal fever. Escherich examined 25 women. Of these, 24 specimens were sterile and 1 contained bacilli. He again examined 13 with puerperal fever, and found staphylococcus in 12; 4 being of the white and yellow variety intermixed; 8 the white only, and 1 of an uncertain form. Cohn and Neumann experimented on 43 cases of milk from healthy women, and found 36 containing staphylococcus albus, 1 staphylococcus aureus and pyogenes, 3 staphylococcus pyogenes albus and streptococcus pyogenes; in 2 all the above forms were united.

The writer made a series of investigations, drawing and using milk from the deeper parts of the breast only, the experiments being made under the strictest antiseptic precautions. The milk was taken from 12 healthy and 13 unhealthy patients.

The results were as follows: 3 specimens were sterile; 17 specimens contained staphylococcus pyogenes albus; 2 specimens contained staphylococcus pyogenes aureus; 1 specimen contained staphyloccocus pyogenes albus and aureus; 2 specimens contained staphylococcus pyogenes albus and streptococcus pyogenes.

An examination of the mouths of nursing infants revealed corresponding bacteria in their secretions.

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### Treatment of Eclampsia.

Charpentier (*Archives de Tocologie*, 1893, p. 509), in a collection of 454 cases from various sources, gives his results as follows: Children dead before or during labor 164, or 36.12 per cent.; maternal mortality 110, or 24.88 per cent. His conclusions are as follows:

1. Every pregnant woman who is albuminuric is exposed to eclampsia. Consequently, we should examine the urine of all women during the period of gestation, and if the least trace of albumin be found, they should at once be placed on an absolute milk diet. Milk is, above all, the best preventive of eclampsia.

2. Whenever one deals with an eclamptic, if she be strong, vigorous, and

very cyanosed, start with a bleeding of 400 to 500 grammes, then administer chloral and milk as soon as possible.

3. If the patient be delicate and less cyanosed, and if the fits be less frequent, omit bleeding.

4. As far as possible let the labor occur spontaneously, and terminate without interference.

5. If labor be spontaneous, and uterine contractions fail, use the forceps or version if the child be alive. Should it be dead, we should have recourse to cephalotripsy or cranioclasis.

6. Avoid interference until the maternal parts be so dilated, or dilatable, as to make it safe for the mother.

7. Reserve induced labor for exceptional cases, where medical treatment has failed.

8. Reject absolutely Cæsarean section and forced labor; above all, forced labors by the deep incision of the neck.

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## GYNECOLOGY.

UNDER THE CHARGE OF

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### The Results of Operations on the Adnexa.

Chrobak (*Wiener klin. Wochenschrift*, 1893, No. 49) bases his conclusions on a study of all the operations performed in his clinic during five years, with special reference to cases of at least three years' standing. He calls attention to the great difficulty experienced by surgeons in learning the true condition of patients, since they do not, as a rule, respond satisfactorily to the requests for information. The actual menace to life presented by pyosalpinx has been exaggerated, since the record of the Vienna Hospital for four years showed only fourteen deaths directly due to abscess of the ovary and tube in patients who were not operated upon (excluding tuberculosis) out of 4351 from all causes. The writer's mortality in 146 operations was 4.1 per cent. Of 100 patients who were addressed, 47 responded. It was found that 8 were perfectly well, 32 improved, 3 were not relieved, and 4 were worse than before; 26 reported that they were perfectly able to work, 15 could do more than before, but 6 could do no work. Of those who did not reply it was known that many were well, so that the writer was inclined to believe that in his own cases about fifty per cent. of the patients were entirely relieved by the operation.

He concludes that the vasomotor disturbances following the removal of the adnexa are more severe and obstinate than those attending the normal climacteric. Inflammation around the stumps is of frequent occurrence. Marked diminution or extinction of sexual desire is comparatively rare.

### Ovariotomy during Pregnancy.

May (*British Med. Journal*, December 2, 1893) reports an interesting case of ovariotomy in the last month of pregnancy, the patient not having menstruated since the birth of her child two years before. The tumor was of over a year's standing. A number of adhesions were broken down, and eighteen quarts of fluid were withdrawn from the cyst. The patient was seized with labor-pains during the night and was delivered of a dead child, making an uneventful recovery.

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### Nerve Theory of Menstruation.

Martin (reprint of paper read before the British Gynecological Society) proposes the following theory: Menstruation is under the direct control of a special nerve centre situated in the lumbar part of the cord. Changes in the endometrium at the time of menstruation are under the direction of "katabolic nerves," and in the inter-menstrual periods by "anabolic nerves." Menstrual impulses are conveyed to the uterus through the pelvic splanchnics or the ovarian plexus, perhaps both. The arrest of menstruation after removal of the adnexa is due to section of the "menstrual nerves."

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### The Escape of the Ovum into the Tube.

Heil (*Archiv für Gynäkologie*, Band xliii., Heft 3), from numerous experiments on rabbits, decides that the presence of a constant motion toward the fimbriæ of the tube (Fimbrienstrom) sufficient to carry an ovum which is in contact with the peritoneum into the *os abdominale*, has not been positively settled by experiments. Several factors must be noted. When the fimbriæ are in contact with the ovary at the point where the Graafian follicle ruptures, the conditions are most simple, since the ovum either falls directly upon a fimbria, and is carried along by the cilia, or it is floated over upon the fimbria in the liquor folliculi.

In cases in which the ovum falls into the peritoneal cavity at a distance from the tube, it either perishes (how often it is impossible to determine) or it is carried to the tube in the layer of peritoneal serous fluid, either by the peristaltic movement of the intestines or by capillary attraction.

We may also assume, with Pinner, that at the time when the follicle ruptures there is a reflex action on the cilia, which are stirred to stronger movements in order to carry the ovum along more vigorously. The writer has been unable, from his own experiments, to convince himself that the lymph current which sets toward the abdominal end of the tube is sufficient to carry an ovum across the abdomen into the opposite tube. He doubts if the question will ever be definitely settled experimentally.

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### The Histogenesis and Etiology of Uterine Fibromyoma.

Gottschalk (*Ibid.*) concludes from his microscopical studies that fibromyomata have their origin in a long-continued irritation, and that their development is directly dependent upon the arterial blood supply. Practical deductions from this theory are the necessity of avoiding all irritation which

might lead to persistent congestion of the uterus, such as traumatism during local treatment, sexual excess, etc. As soon as a small fibromyoma is detected especial care should be taken to place the uterus under the most favorable condition for limiting its growth. Ligation of both uterine arteries is a rational procedure at this early stage. In three cases in which the writer performed this operation there was a notable diminution in the size of the growth in two instances, while in the third it disappeared entirely (?), there being a notable relief of the menorrhagia.

The relief afforded by castration is to be referred rather to the diminution of the blood supply to the tumor consequent upon ligation of the ovarian arteries, in addition to the elimination of the periodical monthly congestion.

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### Sarcoma Uteri Deciduo-cellulare.

Sänger (*Archiv für Gynäkalogie*, Band xliv., Heft 1) presents another elaborate paper on the subject of this form of neoplasm, which he was the first to describe. He suggests, in common with Pestalozza, a possible parasitic origin, in view of the fact that several of the reported cases presented phenomena suggesting an infectious disease of the decidua. It seems to have no relation to septic infection. The principal clinical symptoms are persistent hemorrhages, occurring sometimes after an abortion or normal delivery, which may soon cease after curettage. Following the hemorrhages there is a constant foul, sanguinolent discharge, with later septic symptoms. The uterus gradually enlarges and assumes a nodular form, while progressive anæmia, and finally cachexia are noted. Metastases develop, especially in the vagina. Secondary growths in the lungs, and hemorrhagic pleural effusion being indicated by the appearances of dyspnœa, cough, and bloody expectoration. The disease runs a rapid course, terminating fatally within six or seven months. The condition should be suspected when profuse hemorrhages and foul discharges follow normal labor or abortion, especially if these discharges continue after the removal of retained products of conception. Puerperal septic endometritis and tuberculosis are most likely to be diagnosticated in these cases. The growth is distinguished from carcinoma and ordinary round-celled sarcoma by the microscope, the history of a recent pregnancy being an important clue to the true condition. In order to confirm the diagnosis it is necessary to dilate the cervix with tents and to palpate the uterine cavity, instead of relying on the curette alone. The prognosis is bad on account of the tendency of the neoplasm to early metastasis, hence the necessity of prompt extirpation of the uterus. In every case of retention of the products of conception, and especially after the removal of placental moles, we should bear in mind the possibility of beginning sarcomatous degeneration.

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### Uretero-ureterostomy.

Kelly (*Bulletin of Johns Hopkins Hospital*, Oct., 1893) reports an interesting case of hystero-myomectomy, in which the dilated ureter was ligated and divided under the impression that it was an enlarged vein. After removing the tumor the question of disposing of the incised ureter was considered, three modes of treating it being presented: to establish a fistula by

suturing the proximal end in the flank or in the abdominal wound, to remove the kidney, or to anastomose the ureter. The latter course was adopted, a slit being made in the lower portion of the ureter below the point of ligation, into which the proximal end was invaginated and secured by fine silk sutures, drainage with gauze being used in case of leakage. The patient made an uneventful recovery, being catheterized every four hours during the first day, after which she passed her urine voluntarily. There was no marked diminution of the daily amount of urine, and though albumin was present in considerable amount before the operation, none appeared subsequently.

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### Removal of the Uterus for Suspected Malignant Disease.

Cordier (*Kansas City Medical Index*) properly holds that it is better to remove the uterus even when the microscopical evidence of malignant disease is not positive than to wait until the diagnosis has become certain, when the case may be inoperable. His conclusions are as follows:

Cancer of the cervix uteri is nearly always a local disease, which is sure to terminate fatally if allowed to run its usual course. Early extirpation is attended with a low rate of mortality and is curative in a considerable number of cases. Microscopical examination of suspected tissue does not always present the typical appearances of cancer, even when it is present; hence, one should not base his decision against operative interference on this criterion alone when there is other strong evidence of existing malignant disease.

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### The Surgical Significance of Dust.

Haegler (*Beitr. zur klin. Chirurgie*, Band ix., p. 496) has found by experiment that floating germs in the air of an operating-room may be almost entirely removed by steam, and that their reaccumulation is best prevented by keeping the floor, walls, and furniture damp. Before removing the dressing from the field of operation it should be moistened with sterilized water. No dressings intended to be placed over the wound should be exposed, but they should be kept in closed dishes the interior of which is kept moistened with an antiseptic solution. The dust on the floor and walls of the operating-room is to be regarded as infectious material, the evil effect of which may be neutralized by saturating the room with steam a half or a quarter of an hour before the operation. The operator and his assistants should pay particular attention to the hair, which should be moistened or oiled. Sterilized gowns are safer if they are worn when they are still damp from the sterilizer.

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### Petroleum in the Treatment of Cancer.

Desprès (*Gaz. des Hôpitaux*, 1893, No. 68) employs refined petroleum in the treatment of inoperable carcinoma of the cervix uteri, making deep injections into the growth, which are painful but cause a speedy separation of sloughs, desiccation of ulcerating surfaces, and disappearance of odor. Injected into abscesses, petroleum causes speedy healing. In cases of acute vaginitis he uses thrice daily a douche of from three to five ounces of petroleum, which usually cures the trouble in six days. He calls attention to its

power as a disinfectant, while it does not irritate mucous membranes, though it may cause vesication (but not sloughing) of the already inflamed skin.

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### Unusually Large Ovarian Tumor.

Maritan (*Gaz. Méd. de Paris*, 1893, No. 2) removed an ovarian cyst weighing two hundred pounds from a patient whose weight before the operation was two hundred and ninety pounds, her circumference at the umbilicus being ninety inches. The length of the abdominal incision was about twenty-eight inches. The patient suffered from collapse, but made a good recovery.

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### Foreign Bodies in the Abdominal Cavity.

Anonymus (*Revue des Mal. des Femmes*, 1892, No. 4) reports several cases in which foreign bodies were left in the abdominal cavity after cœliotomy. In one instance a gauze compress a foot long was discharged per rectum eight months after myomectomy had been performed, the patient having no trouble until four months after the operation. In another a strip of iodoform gauze, fifteen inches long, was withdrawn from the intestines of a young girl who had undergone salpingotomy. A month later vaginal hysterectomy was performed, as she had not been relieved by the first operation. Several months after, a secondary cœliotomy was performed on account of persistent abdominal pain. In endeavoring to separate an adherent loop of intestine, which was supposed to be the seat of the trouble, it was accidentally ruptured, when the gauze protruded. Five inches of the gut were excised, and the patient eventually recovered after having a fecal fistula. In two other cases a sponge and a forceps were missed soon after the patient had been placed in bed. In both cases the patient was returned to the operating-room, the wound reopened and the missing objects were found in the abdominal cavity.

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### Tubal Pregnancy; Difficulty of Differential Diagnosis.

Pichevin (*Nouv. Arch. d'Obstétr. et de Gynécol.*, 1892, No. 9) reports the case of a woman, aged forty years, who had always menstruated regularly. Her period was delayed twelve days; then she had an irregular flow for several weeks; after this had ceased for two weeks, she had a sudden attack of severe abdominal pain, without collapse. The hemorrhages ceased and then returned, persisting for three or four weeks. The patient then presented the ordinary mammary signs of pregnancy; the cervix uteri was soft and patulous, and the fundus extended three inches above the symphysis. To the left of the uterus could be felt a tumor, which dipped down into Douglas' pouch and extended upward into the abdomen; no fluctuation could be detected. On opening the abdomen two ovarian cysts were found (one tubo-ovarian?), but no sign of ectopic gestation.

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### New Operation for Prolapsus.

Freund (*Centralblatt für Gynäkologie*, 1893, No. 47) describes a new operation for prolapsus which he has performed in five cases with satisfactory

results. Its advantages are rapidity of execution, as there is no denudation, painlessness (so that it can be performed without an anæsthetic), and the fact that there are no sutures to be removed. It is especially applicable to old women, who have neither hypertrophy of the cervix, destruction of the pelvic floor, nor tumor, etc., requiring the usual operations. It should not be undertaken if the cervix or vaginal wall is ulcerated.

The operation consists essentially in inserting three or four purse-string sutures (as in Stoltz's method) of silver wire. A curved needle is first entered beneath the vaginal mucosa at a point just above the portio, and is run in and out, emerging at the point of entrance. As this suture is tightened the cervix is pushed upward (as in Lefort's operation), and the wire is twisted. A second circular suture is inserted an inch above the first, and is twisted until the calibre of the vagina at that point is narrowed to the size of the finger, then a third suture in the same manner, the last being placed close to the remains of the hymen. The latter must not be twisted so tight as to effect kolpokleisis. The operation is bloodless, takes only a few minutes, and is well borne by old patients, who need be kept in bed only one day. In one case the patient, who had a large cystocele and rectocele, still menstruated and performed her matrimonial duties. There was no recurrence of the prolapse with severe muscular efforts. The sutures are not removed at all.

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### Use of Clamps in Vaginal Extirpation of the Uterus.

Landau (*Berliner klin. Wochenschrift*, 1893, Nos. 24–26) reports seventy-one cases, with five deaths, in all of which he secured the broad ligaments with clamps instead of using ligatures. The technique differs according as the uterus is perfectly movable or the reverse. In the former case the uterus is anteflexed, after incising the vesico uterine fold of peritoneum, and is drawn down forcibly, so that the finger can be hooked over the left broad ligament, which is then secured with one or two clamps and is divided, when it is an easy matter to clamp the ligament on the right side. The ovaries and tubes are afterward drawn down and clamped off if desired. Bleeding vessels on the edge of the vaginal wound are caught with forceps. A gauze tent is pushed up into the opening and the operation is concluded, the average time in an easy case being only ten minutes. When the uterus is fixed by perimetric indurations the organ is drawn forcibly downward, while the broad ligaments are clamped in sections and divided. If ovarian cysts or pus tubes are encountered, these are pulled down into the wound and incised outside of the peritoneal cavity, then clamped off. In complicated cases, when there is extreme fixation, Péan's method of removal by *morcellement* is employed. A catheter is left in the bladder until after the clamps are removed, *i. e.*, for thirty-six or forty-eight hours. Two or three vaginal douches are given daily after the latter have been removed. The patient is usually out of bed by the eighteenth day. The writer denies that there is any more danger of sepsis with the clamps than with ligatures, nor is there any added risk of injuring adjacent viscera. He has no fear of secondary hemorrhage if the clamps are left *in situ* for thirty-six hours, nor has he noted that the patients complain of more pain than when ligatures were used.

He claims, as an additional advantage for this method beside rapidity of operating, the fact that when using clamps he would be induced to extirpate the uterus in cases in which he would not attempt it if he used ligatures, that is, when the organ was more or less fixed.

[We cannot regard the arguments advanced in favor of the clamps as commending themselves to the thoughtful reader. There seems to be no reason for completing the operation so hastily in a simple case, when the patient is usually in the most favorable general condition, while the second class of cases, in which this method is said to have its most useful application, are precisely those which are generally regarded as unsuitable for a radical operation.—C. H. C.]

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### Massage in Sterility.

Bumm (*Centralblatt für Gynäkologie*, 1893, No. 42) recommends massage under the following conditions:

1. Massage by bimanual palpation in cases in which sterility is due to displacements of the uterus, or where in consequence of a former labor there results a chronic inflammatory condition of the uterus or adnexa, preventing a second impregnation.

2. Where the semen is forced out of the vagina immediately after withdrawal, due to narrowness of the canal and an abdominal irritability of the pelvic muscles causing spontaneous contraction. The author has found that massage is particularly useful in such cases.

3. Dilatation and massage of the cervical endometrium by the introduction of steel sounds, which are rubbed up and down in the canal. The special indication for this treatment is the existence of thickening and hardening of the urethra with a diminution in its natural secretion. It is preferable to curettage or cauterization, which may result in a cicatricial formation instead of the formation of normal mucous membrane.

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### The Recurrence of Uterine Cancer by Inoculation.

Winter (*Zeitschr. für Geburt. u. Gyn.*, Bd. xxvii., Heft 1), after an exhaustive clinical study of the mode of extension of cancer from the cervix uteri to adjacent tissues and organs, and also by metastasis, enters into a thorough examination of the subject of recurrence after total extirpation. He finds that local recurrence always begins around the cicatrix in a concentric form, and that the disease advances slowly by peripheral growth in precisely the same manner in which the original neoplasm would have extended from the cervix. He is firmly convinced that early recurrence can often be traced to the inoculation of healthy tissue with cancerous material during the operation, and deduces the following practical rules:

Do not touch the cancerous tissue with the finger while operating. Use constant irrigation with sublimate 1:1000, washing away detached cancerous masses, so that they shall not touch healthy raw surfaces. Avoid if possible tearing away, or breaking down the neoplasm; if this is done, touch the surface with the cautery. It is better to curette and cauterize at the time of the radical operation rather than a few days before, since general infection or localized peritonitis may be caused by the preliminary curettage, which would complicate or diminish the benefit of the radical operation.

# PÆDIATRICS.

UNDER THE CHARGE OF

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ASSISTED BY

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## HERPES LABIALIS IN THE DIAGNOSIS AND PROGNOSIS OF MENINGITIS.

STATISTICS show that in epidemic meningitis labial herpes is very frequent, occurring in about half the cases, while in tubercular meningitis its presence is exceptional. It would, therefore, seem that labial herpes occurring with meningitis should be a valuable diagnostic sign in favor of the epidemic nature of the disease, even when many of the symptoms suggest a tubercular origin. Upon this ground F. KLEMPERER (*Berliner klin. Wochenschrift*, 1893, No. 29) was able to make a diagnosis of epidemic cerebro-spinal meningitis in three cases where the majority of the essential symptoms strongly suggested tubercular disease. The diagnosis was verified in two of the cases by complete recovery, and in the third by an autopsy that showed no trace of tuberculosis.

Herpes labialis differs so essentially from herpetic eruptions in other regions (excepting only genital herpes) that reasonable doubt may be entertained of its relation to the group of zonas. The adversaries of the identity of the two call attention to the absence of neuralgia, the bilaterality, and the frequency of repeated attacks in herpes. The view of Gerhardt that labial herpes is a benign neuritis of the minute branches of the trigeminal is only a hypothesis; and the theory of Pfeiffer that zona is distinguished from herpes by the presence of protozoa in its vesicles has not been either confirmed or challenged by any other observer.

In the vesicles of herpes, while the contents are limpid, in subjects of pneumonia, influenza, angina, or rheumatism, divers varieties of bacteria have been observed. Bouchard has found staphylococci; Symmers a bacillus, sometimes filamentous, coloring culture media green; and Klemperer has cultivated the pneumococcus, the streptococcus, and the staphylococcus albus. According to the author the microbes found in the vesicles are the true cause of herpes, for they are present from the very formation of the vesicle. There should exist, therefore, a direct relation between the microbes of herpes and those associated with the diseases in which the herpes manifests itself; and it may be considered that herpes is only a localization of the microbe which has caused the primary disease. This view is further supported by the fact that herpes only exceptionally appears in diseases associated with a specific microbe, such as typhoid fever, diphtheria, and tuberculosis. It may be concluded, therefore, with reference to meningitis, that

labial herpes should warrant the diagnosis of the epidemic form of the disease. It must be remembered, however, that the appearance of herpes in the course of meningitis does not necessarily imply that the subject is not tuberculous, or that a mixed infection, even affecting the meninges, may not exist. In other words, the appearance of herpes labialis in acute meningitis pleads only against the diagnosis of a pure tubercular infection.

This conclusion is important from a prognostic point, but it does not warrant the expectation, as in pneumonia, that the appearance of herpes is of good omen. In meningitis, by suggesting the possibility of the presence of a more favorable type of the disease, it may encourage the hope of retrocession of the symptoms—a termination nearly, if not always, impossible in the tubercular form.

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### The Surgical *vs.* the Medico-pædagogic Treatment of Idiotic and Backward Children.

Bourneville (*Le Progrès Médical*, 1893, No. 25, p. 465), in an elaborate paper under this title, collects all the cases of craniectomy published since Fuller's first operation in 1878, which preceded by twelve years the more widely-known experiments of Lannelongue, to whom the operation is generally accredited. Eighty-three cases are embraced in these tables. The operative mortality was 15 or 18 per cent. Under the term medico-pædagogic treatment he includes the system of training instituted by the elder Seguin, and perfected by the introduction of modern methods, lasting over a period of years, which in nearly all cases produces decided amelioration and often restores such children to a condition permitting them to live happily in society.

The conclusions from study of the surgical aspect of treatment are as follows:

1. Surgical treatment of idiocy rests upon an hypothesis which is not confirmed by the pathological anatomy.

2. Premature ossification of the sutures of the cranium does not exist in the different forms of idiocy. Only exceptionally is partial synostosis encountered.

3. The lesions to which idiocy are due are ordinarly profound, extended, varied, and little susceptible of being modified by craniectomy.

4. The diagnosis of synostosis of sutures and thickness of the cranium cannot be made by present methods of investigation.

5. According to the majority of surgeons the results obtained by operative measures are slight, doubtful, or negative. Grave accidents (paralysis, convulsions, etc.), and death, may follow operation.

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### Treatment of Tubercular Peritonitis in Children.

A study, based upon four cases of his own, leads Conitzer (*Deutsche med. Wochenschr.*, 1893, No. 29, p. 688) to the following conclusions:

1. Peritoneal tuberculosis is capable of spontaneous recovery; the dry form very rarely, the exudative more frequently.

2. The exudative form, which terminates in recovery, has been considered by many writers as a simple chronic peritonitis or an essential ascites.

3. All forms of tubercular peritonitis can be cured or at least benefited by laparotomy after other forms of treatment have failed.

4. The success of the operation depends upon the form of peritonitis (the exudative is more favorable than the dry); upon the duration of the disease; and upon the complications.

5. The operation is indicated when internal treatment fails; it is contra-indicated in very feeble subjects and those presenting other tubercular lesions.

## HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

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### Dissemination of Cholera Germs by Air-currents.

N. William (*Zeitschrift für Hygiene und Infectionskrankheiten*, Bd. xv., Aug. 25, 1893), experimenting on the spread of cholera germs by moving air, reports that while that means has been regarded as most favorable to their spread, in actual experiment it fails. Mixed with dry dust the germs live but a short time, and perish more quickly when a current of air is conducted through the dust. When the dust is distributed through large volumes of air the germs quickly die, and only when the impregnated dust is let fall into a suitable culture medium can a very small proportion of living bacilli be obtained. In other words, cholera germs adherent to particles of dust floating in and moved about by the air cannot retain their activity for any length of time nor for any considerable distance.

### Poisons in Canned Vegetables

The Department of Agriculture, Chemical Division, has been investigating the matter of canned foods, under the direction of H. W. Wiley (*Foods and Food Adulterants*, 1893, part viii.). The work was directed especially to methods of preserving, preservatives employed, and food value and digestibility. As to the wholesomeness or unwholesomeness of added preservatives, the report draws attention to the fact that the great weight of testimony is to the effect that while these substances in small quantities are not injurious to health, their continued use may finally become prejudicial. It is also shown that the same quantities which prevent the action of micro-organisms, and thus prevent decomposition, are also active in the digestive organs and hinder the normal functions of the digestive ferments. There are other added chemicals in many varieties of canned vegetables used for adding to the attractiveness of their appearance. Considerable attention was paid to the

examination of the vessels containing the vegetables. The German law prohibits the presence of more than 1 per cent. of lead in tins employed for holding canned goods, but in this country there is no restriction whatever in regard to the character of the tin employed, some of which has been found to contain as much as 12 per cent. of lead. In Germany, the solder employed in sealing cans is not allowed to contain over 10 per cent. of lead, while here the anlyses of numerous samples of solder employed show that it contains fully 50 per cent. In addition to this, no care is taken to prevent the solder from coming in contact with the contents of the can; large surfaces of solder on the seams are exposed to the action of the acid contents, so that lead is a very common constituent of canned goods. Another great source of danger from lead exists in the use of glass vessels closed with lead tops or with rubber pads containing sulphate of lead.

With regard to the food value of canned goods, the report shows that in such vegetables as string-beans, asparagus, etc., it is quite low, while in such as canned corn, succotash, etc., it is quite high. The lowest percentage of dry matter in Amercan string-beans was 4.17, showing that in purchasing one hundred pounds of such material one buys 95.83 pounds of water. In one specimen of French string-beans the percentage of water was 96.13.

In the course of the investigations, eighty-one samples of canned and bottled peas were examined; forty-three were of American and thirty-seven of foreign origin. All of the foreign brands, except two, contained copper; one contained zinc. Fourteen of the forty-three American samples contained copper; twenty-nine did not. Salicylic acid was present in five French and ten American samples. Tin was present in fifty samples, lead in fifty, and zinc in fifteen.

In all, two hundred and forty-eight samples of all sorts of vegetables were examined, and in no less than one hundred and twenty-one was salicylic acid detected. Zinc was found in forty, copper in eighty-eight, and lead in one hundred and thirty-two.

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